



Covanta Honolulu Resource Recovery Venture, LLC

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RETURN RECEIPT REQUESTED 7020 1290 0000 5655 9775

Lene Ichinotsubo, P.E. Solid & Hazardous Waste Branch Environmental Management Division Hawaii Dept. of Health 2827 Waimano Home Road, Rm. #100 Pearl City, HI 96782

Re:

CHRRV's Solid Waste Permit No. IN-0049-11

Subject:

2nd Quarter 2021 Ash Sampling Results for Units 1, 2, 3

Dear Ms. Ichinotsubo:

Please find the enclosed Ash Characterization Reports which includes the final analysis and disposition of ash samples collected in 2nd Quarter 2021. All samples were analyzed and evaluated in accordance with SW-846 methods and the EPA Office of Solid Waste, Guidance for the Sampling and Analysis of Municipal Waste Combustion Ash (June 1995), as required by the Solid Waste Permit.

Covanta HPOWER has been conducting sampling for Units 1 and 2 under the new fully operational ash tower conditions since 4th quarter 2020. The configuration of the new tower is consistent with what was submitted in the addendum to the ash tower modification on July 17, 2020.

Unit 3 Ash Sampling was collected utilizing a modified ash sampling plan discussed in correspondence dated August 12, 2016.

In summary, all results were below regulatory thresholds. If there are any questions, please contact Ms. Katelyn Asato at 682-0264.

Sincerely.

June 23, 2021

KTA:tt 210603tw Tony Waldo Facility Manager

Enclosure

CC:

Ahmad Sadri, City & County of Honolulu

Lene Ichinotsubo, State of Hawaii, Department of Health (e-mail)

COVANTA HONOLULU RESOURCE RECOVERY VENTURE

Units 1 & 2

2nd Quarter 2021 Ash Characterization Results

COVANTA INC. ENVIRONMENTAL DEPARTMENT

ENVIRONMENTAL TEST REPORT FOR HONOLULU RESOURCE RECOVERY VENTURE'S H-POWER UNIT 1, 2

CEG REPORT NO.:

4514

REPORT DATE:

June 16, 2021

PREPARED FOR:

Honolulu Resources Recovery Venture H-Power

PURPOSE:

Characterization of Ash Residue from Unit 1 and 2

SAMPLE PERIOD:

April 2021

ASSOCIATED

REPORTS:

Sampling Protocol Dated July 31, 1990

And EPA'S Final Guidance

PREPARED BY:

Covanta, Inc.

Environmental Department

COMBINED ASH RESIDUE CHARACTERIZATION REPORT FOR HONOLULU RESOURCE RECOVERY VENTURE'S H-POWER UNIT 1 and 2

TABLE OF CONTENTS

SECTION	SUBJECT
_	
1	INTRODUCTION
2	FIELD ASH SAMPLING PROCEDURES
3	LABORATORY INFORMATION
4	ASH SUBSAMPLE PREPARATION
5	ANALYTICAL PROCEDURES
6	DATA ANALYSIS
7	CONCLUSIONS
8	REFERENCES
TABLES	
1	Field Ash Sample Schedule and Bulk Characteristics
2	Laboratory Results and Statistics
3	Comparison of SW-846 Statistical Results and Regulatory Thresholds
	for Metal Analytes
A PDFD UDYGUG	
APPENDICES	
A	Element One, Inc. TCLP Analytical Report
В	Pace Analytical Services, Inc. Dioxin and Furan Analytical Report

1.0 INTRODUCTION

A combined ash residue characterization program was implemented for the RDF combustion Units 1 and 2 at the H-Power Municipal Combustor facility located in Kapolei, Hawaii. The program was designed to be consistent with the Hawaii Department of Health's Solid Waste Management requirements for the management of ash residue from municipal waste incineration regulations. Ash sampling for Units 1 and 2 at the H-Power Municipal Waste Combustor Facility were performed by representatives of the Honolulu Resource Recovery Venture (HRRV) during April 2021. The sampling program was conducted in accordance with the procedures provided in the Facility Combined Ash Sampling Protocol: June 2012 (the protocol), with the exception of the described sample being unloaded from a trailer. As discussed with the Agency throughout 2020, Covanta HPOWER transitioned to the new RDF ash tower in September 2020. In the new configuration, consistent with the July 17, 2020 submittal, the ash falls to a bunker and is then mixed and loaded to a trailer for transport to the landfill. All other multi-incremental sampling methodology is consistent with the 2012 sampling protocol. The program was designed to incorporate the analytical procedures in EPA's May 24,1994 draft guidance document, "Sampling and Analysis of Municipal Refuse Incinerator Ash" (1) and its supporting document. "Test Methods for Evaluating Solid Waste" (SW-846). (2) The analytical program is consistent with the EPA's final guidance on ash sampling. (3) The ash samples were evaluated in accordance with the procedures set forth by the U.S. EPA Toxicity Characteristic Leaching Procedure (TCLP), Method 1311, as described in 40 CFR 261, Appendix II.

2.0 FIELD ASH SAMPLING PROCEDURES

Field sampling of the combined ash was performed by representatives of the facility at a location consistent with the designated sampling site in the approved sampling protocol and where representative samples could be safely obtained. Ten ash samples were collected during April 2021. The sample dates and associated sample labels for the ten samples ultimately analyzed are identified in Table 1.

3.0 LABORATORY INFORMATION

One subsample was generated from the ten individual composite ash samples that were collected during the ash characterization. This one composite sample was delivered to the Pace Analytical Services, LLC. laboratory for dioxin and furan analysis. The ten individual composite samples collected for TCLP metals determination were delivered to Element One Inc. for sample preparation and TCLP analysis for the eight RCRA metals as determined by EPA Method 1311. Both Element One Inc. and Pace Analytical Services, LLC. are NELAP and a NELAC accredited laboratories in several US States.

4.0 ASH SUBSAMPLE PREPARATION

When received at analytical lab Element One Inc., the ten ash samples were weighed and screened through a 0.375" sieve to determine percent of material, plus and minus the sieve size and to do additional crushing as necessary. In addition to analyzing each sample for TCLP for the RCRA metals, an additional subsample from each of the ten ash samples was taken to determine the moisture content, percent volatile solids, laboratory pH, total RCRA metals and total hexavalent chromium.

Table 1 presents the laboratory preparation weights of the individual samples and the moisture results. The laboratory data used to develop Table 1 is provided in Appendix A.

5.0 ANALYTICAL PROCEDURES

The Toxicity Characteristic Leaching Procedure (TCLP) was performed in accordance with Method 1311 as detailed in the Environmental Protection Agency Manual SW-846 - Test Methods for Evaluating Solid Waste - Physical/Chemical Methods.

6.0 DATA ANALYSIS

6.1 ANALYTICAL RESULTS

The laboratory analytical results are presented as Appendices A and B of this report. The laboratory analytical data presented as Appendix A have been evaluated in accordance with the procedures in SW-846, Chapter 9. The quality assurance and quality control results are also submitted in Appendix A and Appendix B.

6.2 STATISTICAL RESULTS

The statistical results for metals are presented in Table 2. Laboratory results below the detection limit are presented in Table 2 as the laboratory detection limit.

Table 3 presents a comparison of the Regulatory Threshold for each metal analyte and the relevant SW-846 statistical value for determining whether a waste material exhibits a toxic characteristic.

6.3 DIOXIN AND FURAN ANALYSIS

The results of the single composite combined ash sample for dioxins and furans are attached as Appendix B. The total 2,3,7,8-TCDD Equivalence was 130 ng/Kg or ppt. The total tetrachlorinated dibenzo-dioxins (TCDD) and furans (TCDF) are expressed in units of parts per trillion (ppt). The wet results represent 21.4% moisture content as determined by the 10.0-gram sample analyzed by Pace Analytical Services, LLC. The pertinent information from this laboratory report is as follows:

Analyses Reference	Analyte	Dry Results (ppt)	Wet Results (ppt)
DB-5/ DB-225	Total TCDD	200	157
DB-5/ DB-225	Total TCDF	930	731

6.4 TOTAL METALS AND HEXAVALENT CHROMIUM

Total and TCLP metals (arsenic, barium, cadmium, chromium, lead, selenium and silver) were analyzed for each of the ten samples using the analytical procedure 6020B. Total mercury was analyzed using procedure 7470A and TCLP mercury was analyzed using procedure 7470A. The procedure used for hexavalent chromium was 3060A.

7.0 CONCLUSION

All analytical data was evaluated in complete compliance with the procedures set forth and required by SW-846. The composite analytical evaluation and the statistical evaluation have determined that the ash does not exhibit a hazardous characteristic and that it should be managed as a non-hazardous solid waste.

8.0 REFERENCES

(1) Environmental Protection Agency,
 "Sampling and Analysis of Municipal Refuse Incinerator Ash," (Draft Guidance Document) May 1994

- (2) Environmental Protection Agency,"Manual SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods," March 1992.
- (3) Environmental Protection Agency,
 "Guidance for the Sampling and Analysis of Municipal Waste Combustion Ash
 for the Toxicity Characteristic," June 1995.

FIEL	D ASH SAMPLE SCH	Table 1	CHARACTI	ERISTIC	<u>S</u>				
		Composite Subsample Bulk Characteristics (Kilograms)							
Sample	<u>Date</u>	Greater than 3/8 Inches and Non-Crushable Metals	Less than 3/8 Inches	<u>Total</u>	Moisture (As Wt. %)				
36688-1	4/19/2021	0.00	0.09	0.09	21.9				
36688-2	4/19/2021	0.00	0.09	0.09	22.0				
36388-3	4/20/2021	0.00	0.10	0.10	23.8				
36388-4	4/21/2021	0.00	0.10	0.10	19.9				
36388-5	4/21/2021	0.00	0.10	0.10	22.5				
36388-6	4/21/2021	0.00	0.10	0.10	20.1				
36388-7	4/23/2021	0.00	0.10	0.10	20.9				
36388-8	4/23/2021	0.00	0.10	0.10	21.3				
36388-9	4/28/2021	0.00	0.10	0.10	22.9				
36388-10	4/28/2021	0.00	0.10	0.10	24.6				

TABLE 2.0 LABORATORY RESULTS FOR THE COVANTA HONOLULU INC. UNITS 1, 2 FACILITY 2.1 SAMPLE SPECIFIC RESULTS Concentration Levels [mgl] Barium Sample Date of Arsenic Cadmium Chromium Lead Mercury Selenium Silver Number Com posite H 9) (As) (Ba) Cd) (Cr) Pb) Se) (QA) 36688-1 4/19/2021 0.05 0.510 0.050 0.073 0.05 0.0004 0.05 0.05 0.623 0.05 86668-2 4/19/2021 0.05 0.05 0.05 0.0004 0.05 0.05 36688-3 4/20/2021 0.05 0.440 0.05 0.05 0.0004 0.05 0.05 0.05 36668-4 4/21/2021 0.05 0.487 0.05 0.05 0.05 0.0004 0.05 0.05 36688-5 4/21/2021 0.05 0.05 0.398 0.069 0.05 0.0004 0.05 0.05 36688-6 4/21/2021 0.05 0.473 0.05 0.067 0.05 0.05 0.0004 0.05 36688-7 4/23/2021 0.05 0.493 0.05 0.05 0.05 0.0004 0.05 0.05 36688-8 4/23/2021 0.05 0.480 0.05 0.05 0.05 0.0004 0.05 0.05 B6688-9 4/28/2021 0.05 0.05 0.484 0.05 0.05 0.0004 0.05 0.05 36688-10 4/29/2021 0.05 0.470 0.05 0.05 0.05 0.0004 0.05 0.05 2.2 Statistical Analysis 100.0 Re gulato ry Threshold 5.0 1.0 5.0 5.0 0.20 1.0 5.0 Number of Sam des 10 10 10 10 10 10 10 10 Sum of the Concentrations 0.50 4.858 0.50 0.56 0.50 0.0040 0.50 0.50 (Sum of the Concentrations] 0.25 23.600 0.25 0.31 0.25 0.00002 0.25 0.25Sum of the Squares of the Concentrations 0.03 2.390 0.03 0.03 0.03 0.000002 0.03 0.03 Student "T" Constant (two tailed confidence interval @ 80%, t.20) 1.38 1.38 1.38 1.38 1.38 1.38 1.38 1.38 Меал, х 0.05 0.486 0.05 0.00 0.05 0.0004 0.05 0.05 Variance, s2 0.00 0.003 0.000 0.00 0.0000 0.00 0.00 0.00 Standard Deviation, s 0.00 0.057 0.00 0.00 0.01 0.00 0.00 0.00 Standard Error, sx 0.00 0.018 0.000 0.00 0.00 0.00 0.000 0.00

0.06

0.05

0.05

0.05

0.0004

Upper Confidence Interval (normal)

0.05

0.511

0.05

Table 3

COMPARISON OF SW-846 STATISTICAL RESULTS AND REGULATORY THRESHOLDS FOR METAL ANALYTES

Analyte	90% Upper Confidence Interval per SW-846 (b)	Regulatory Threshold (a)
<u>Metals</u>		
Arsenic	0.05	5.0
Barium	0.511	100.0
Cadmium	0.05	1.0
Chromium	0.06	5.0
Lead	0.05	5.0
Mercury	0.0004	0.2
Selenium	0.05	1.0
Silver	0.05	5.0

- (a) 40 CFR Part 261. All units are expressed as milligrams per liter (mg/L).
- (b) 90% Upper Confidence Interval as a single-tailed distribution is equivalent to an 80% Upper Confidence Interval as a two-tailed distribution.

APPENDIX A Element One Inc. Laboratory and QA/QC Results



Element One inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

Phone: 910 793-0128 Fax: 910 792-6863 e1lab@e1lab.com

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021 Client Project Name 2Q21 Units 1&2 Ash Sampling Client Project Number

Sample ID: HON/CA/04-19-21/04:00/U1&2/1a

Sample Matrix Date Combined Sampler	Combine 04/19/20	21	Sample Time Sa Delivere	mpled	Truck 0400 UPS		Date Received Time Received Received by	05/1 1130 LLB	4/2021)
Extraction Begun	05/17/21	1630	Extraction	on Ended	05/18/21	0900	E1 Sample #	3668	38-1
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method		Date
Chromium, TCLP dig	ested	0.073	mg/L	0.05	50	0.001	EPA 1311/60	20B	05/20/21
Arsenic, TCLP digest		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B	05/20/21
Selenium, TCLP dige		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B	05/20/21
Silver, TCLP digested		< 0.05	mg/L	0.05	50	0.001			05/20/21
Cadmium, TCLP dige	ested	0.050	mg/L	0.05	50	0.001	EPA 1311/60	20B	05/20/21
Barium, TCLP digest	ed	0.510	mg/L	0.05	50	0.001			05/20/21
Lead, TCLP digested	1	< 0.05	mg/L	0.05	50	0.001			05/20/21
Mercury, TCLP diges	ted <	< 0.0004	mg/L	0.0004	2	0.0002			05/19/21
Solids		78.1	%				SM2540G	i	05/17/21
pH, Initial		12.88	SU				EPA 1311		05/17/21
Fluid Determination p	Н	8.03	SU				EPA 1311		05/17/21
TCLP pH, Final		8.07	SU				EPA 1311		05/18/21
pH, Extraction Fluid #	‡ 2	2.86	SU				EPA 1311		05/17/21

Ken Smith, Laboratory Director

Page 1 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by Compiled by Country Report 1-10 Country Report Report



Element One Inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolel, Hl 96707 May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-19-21/04:00/U1&2/1a

Sample Matrix Date Combined Sampler	Combined Ash 04/19/2021	Sample Type Time Sampled Delivered by	Truck 0400 UPS		Time Recei	Received Received ved by ample #	05/14/ 1130 LLB 36688-	•
Parameter	Res	sult Result	Unit	Dilution	DL	Meth	od	Date

Parameter	Result	Result	Unit	Dilution	DL	Method	Date
	As Received	Dry Basis					
Chromium, Total	57.9	74.1	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Arsenic, Total	18.8	24.1	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Selenium, Total	< 2.45	< 3.14	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Silver, Total	2.66	3.41	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Cadmium, Total	15.8	20.2	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Barium, Total	429	549	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Lead, Total	919	1177	mg/kg	50	0.1	EPA 3051/6020B	05/25/21
Mercury, Total	0.794	1.02	mg/kg	2	0.2	EPA 3051/7470A	05/27/21
Hexavalent Chromium, Total	< 0.193	< 0.247	mg/kg	10	0.010	EPA 3060A	05/26/21
Total Volatile Residue	3.52		%			SM2540G/E	05/24/21
pH, as received	12.11		SU			EPA 9045D	05/24/21
Solids	7 8.1		%			SM2540G	05/17/21
Moisture	21.9		%			SM2540G	05/17/21

Ken Smith, Laboratory Director

Page 2 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by (Compiled by Compiled by Compiled



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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36688

Covanta Honofulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-19-21/21:28/U1&2/2b

Sample Matrix Date Combined Sampler	Combine 04/19/20:	21	Sample Time Sa Delivere	ampled	Truck 2128 UPS		Date Received Time Received Received by	05/14/2021 1130 LLB
Extraction Begun	05/17/21	1630	Extraction	on Ended	05/18/21	0900	E1 Sample #	36688-2
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dige	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60:	20B 05/20/21
Arsenic, TCLP digest		< 0.05	-	0.05	50	0.001	EPA 1311/60	
Selenium, TCLP dige		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/20/21
Silver, TCLP digested	1	< 0.05	-	0.05	50	0.001	EPA 1311/60:	20B 05/20/21
Cadmium, TCLP dige	sted	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60:	20B 05/20/21
Barium, TCLP digeste	ed	0.623	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/20/21
Lead, TCLP digested		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60:	20B 05/20/21
Mercury, TCLP digest	ted <	0.0004	mg/L	0.0004	2	0.0002	EPA 1311/74	70A 05/19/21
Solids		78.0	%				SM2540G	05/17/21
pH, Initial		12.98	SU				EPA 1311	05/17/21
Fluid Determination p	Н	12.10	SU				EPA 1311	05/17/21
TCLP pH, Final		10.51	SU				EPA 1311	05/18/21
pH, Extraction Fluid #	2	2.86	SU				EPA 1311	05/17/21

Ken Smith, Laboratory Director

Page 3 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by_

Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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elementOne

SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-19-21/21:28/U1&2/2b

Sample Matrix Combined Ash Date Combined 04/19/2021 Sampler		Time	ple Type Sampled ered by	Truck 2128 UPS		Date Received Time Received Received by E1 Sample #		05/14/2021 1130 LLB 36688-2 TOT	
Parameter	Re	sult	Result	Unit	Dilution	DL	Metho	od	Date
	As Re	ceived	Dry Basis						
Chromium, Total	50	8.0	65.1	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Arsenic, Total	15	5.8	20.3	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Selenium, Total	< 2	.32	< 2.97	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Silver, Total	3.	36	4.31	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Cadmium, Total	15	.2	19.5	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Barium, Total	40)3	517	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Lead, Total	84	10	1077	mg/kg	100	0.1	EPA 3051/	6020B	05/25/21
Mercury, Total	0.7	53	0.965	mg/kg	2	0.2	EPA 3051/	7470A	05/27/21
Hexavalent Chromium,	Total < 0.	192	< 0.246	mg/kg	10	0.010	EPA 30	60A	05/26/21
Total Volatile Residue	5.0	9		%			SM2540	G/E	05/24/21
pH, as received	12.	22		SU			EPA 904	45D	05/24/21
Solids	78	.0		%			SM254	0G	05/17/21
Moisture	22	.0		%			SM254	0 G	05/17/21

Ken Smith, Laboratory Director

Page 4 of 20

36688 Covanta Honolulu Quarterty Report 1-10 Compiled by (Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021 Client Project Name 2Q21 Units 1&2 Ash Sampling Client Project Number

Sample ID: HON/CA/04-20-21/02:40/U1&2/3c

Extraction Begun 05/17/21 1630 Extraction Ended 05/18/21 0900 E1 Sample # 36688-3
Percenter Percent District Dis
Parameter Result Unit Calc. RL Dilution DL Method Date
Chromium, TCLP digested < 0.05 mg/L 0.05 50 0.001 EPA 1311/6020B 05/20/21
Arsenic, TCLP digested < 0.05 mg/L 0.05 50 0.001 EPA 1311/6020B 05/20/21
Selenium, TCLP digested < 0.05 mg/L 0.05 50 0.001 EPA 1311/6020B 05/20/21
Silver, TCLP digested < 0.05 mg/L 0.05 50 0.001 EPA 1311/6020B 05/20/21
Cadmium, TCLP digested < 0.05 mg/L 0.05 50 0.001 EPA 1311/6020B 05/20/21
Barium, TCLP digested 0.440 mg/L 0.05 50 0.001 EPA 1311/6020B 05/20/21
Lead, TCLP digested < 0.05 mg/L 0.05 50 0.001 EPA 1311/6020B 05/20/21
Mercury, TCLP digested < 0.0004 mg/L 0.0004 2 0.0002 EPA 1311/7470A 05/19/21
Solids 76.2 % SM2540G 05/17/21
pH, Initial 12.98 SU EPA 1311 05/17/21
Fluid Determination pH 11.67 SU EPA 1311 05/17/21
TCLP pH, Final 10.19 SU EPA 1311 05/18/21
pH, Extraction Fluid #2 2.86 SU EPA 1311 05/17/21

Ken Smith, Laboratory Director

Page 5 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by

Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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elementOne

SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-20-21/02:40/U1&2/3c

	Combine 04/20/202	021 Time		Sample Type Time Sampled Delivered by		Truck 0240 UPS		Date Received Time Received Received by E1 Sample #		2021 -3 T OT
Parameter		Res	ult	Result	Unit	Dilution	DL	Meth	od	Date
		As Rec	eived	Dry Basis						
Chromium, Total		50.	3	66.0	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Arsenic, Total		13.	9	18.2	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Selenium, Total		< 2.3	35	< 3.08	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Silver, Total		24.	4	32.0	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Cadmium, Total		12.	6	16.5	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Barium, Total		437	7	573	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Lead, Total		970)	1273	mg/kg	50	0.1	EPA 3051	/6020B	05/25/21
Mercury, Total		0.68	19	0.904	mg/kg	2	0.2	EPA 3051	/7470A	05/27/21
Hexavalent Chromiur	n, Total	< 0.1	95	< 0.256	mg/kg	10	0.010	EPA 30)60A	05/26/21
Total Volatile Residue	9	5.4	6		%			SM254	0G/E	05/24/21
pH, as received		12.1	5		SU			EPA 90)45D	05/24/21
Solids		76.	2		%			SM25		05/17/21
Moisture		23.	В		%			SM254	40 G	05/17/21

Ken Smith, Laboratory Director

Page 6 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-21-21/09:00/U1&2/4a

Sample Matrix Date Combined Sampler	Combine 04/21/20		Sample Time Sa Delivere	ampled	Truck 0900 UPS		Date Received Time Received Received by	05/14/2021 1130 LLB
Extraction Begun	05/17/21	1630	Extraction	on Ended	05/18/21	0900	E1 Sample #	36688-4
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dige	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	
Arsenic, TCLP digeste	ed	< 0.05	•	0.05	50	0.001	EPA 1311/60	
Selenium, TCLP diges	sted	< 0.05		0.05	50	0.001	EPA 1311/60	
Silver, TCLP digested		< 0.05		0.05	50	0.001	EPA 1311/60	
Cadmium, TCLP dige	sted	< 0.05		0.05	50	0.001	EPA 1311/60	
Barium, TCLP digeste	d	0.487	mg/L	0.05	50	0.001	EPA 1311/602	
Lead, TCLP digested		< 0.05		0.05	50	0.001	EPA 1311/602	
Mercury, TCLP digest	ed <	0.0004	mg/L	0.0004	2	0.0002		
Solids		80.1	%				SM2540G	
pH, Initial		12.99	SU				EPA 1311	05/17/21
Fluid Determination pl	-1	11.09	SU				EPA 1311	05/17/21
TCLP pH, Final		8.29	SU				EPA 1311	05/18/21
pH, Extraction Fluid #2	2	2.86	SU				EPA 1311	05/17/21

Ken Smith, Laboratory Director

Page 7 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by Covanta Honolulu Quarterly Report 1-10 Covanta Honolulu Report 1-10



Element One Inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, Hl 96707 May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling Client Project Number

Sample ID: HON/CA/04-21-21/09:00/U1&2/4a

Sample Matrix Date Combined	Combined Ash 04/21/2021	Sample Type Time Sampled	Truck 0900	Date Received Time Received	05/14/2021 1130
Sampler		Delivered by	UPS	Received by E1 Sample #	LLB 36688-4 TOT

Parameter	Result	Result	Unit	Dilution	DL	Method	Date
	As Received	Dry Basis					
Chromium, Total	54.7	68.3	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Arsenic, Total	9.42	11.8	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Selenium, Total	< 2.45	< 3.06	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Sliver, Total	< 2.45	< 3.06	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Cadmium, Total	4.20	5.24	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Barium, Total	434	542	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Lead, Total	358	447	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Mercury, Total	< 0.196	< 0.245	mg/kg	2	0.2	EPA 3051/7470A	05/27/21
Hexavalent Chromium, Total	0.336	0.419	mg/kg	10	0.010	EPA 3060A	05/26/21
Total Volatile Residue	6.84		%			SM2540G/E	05/24/21
pH, as received	12.10		SU			EPA 9045D	05/24/21
Solids	80.1		%			SM2540G	05/17/21
Moisture	19.9		%			SM2540G	05/17/21

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Page 8 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

May 27, 2021 Client Project Name 2Q21 Units 1&2 Ash Sampling Client Project Number

Sample ID: HON/CA/04-21-21/11:00/U1&2/5b

Sample Matrix Date Combined Sampler	Combined As 04/21/2021	Time	le Type Sampled ered by	Truck 1100 UPS		Date Received Time Received Received by	05/14/2021 1130 LLB
Extraction Begun	05/17/21 163) Extrac	ction Ended	05/18/21	0900	E1 Sample #	36688-5
Parameter	Re	sult Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dig	ested 0.0	069 mg/l	L 0.05	50	0.001		
Arsenic, TCLP digest		.05 mg/l		50	0.001		
Selenium, TCLP dige		.05 mg/l		50	0.001		
Silver, TCLP digested		.05 mg/l	0.05	50	0.001		
Cadmium, TCLP dige	ested < 0	.05 mg/l	L 0.05	50	0.001		
Barium, TCLP digest		398 mg/l	. 0.05	50	0.001	EPA 1311/60	
Lead, TCLP digested	-	. •	_ 0.05	50	0.001		
Mercury, TCLP diges		•	- 0.0004	2	0.0002	EPA 1311/74	
Sollds	7	7.5 %				SM2540G	
pH, Initial		.98 SU				EPA 1311	05/17/21
Fluid Determination p	H 11	.83 SU				EPA 1311	05/17/21
TCLP pH, Final		.40 SU				EPA 1311	05/18/21
pH, Extraction Fluid #	2 2	.86 SU				EPA 1311	05/17/21

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Page 9 of 20

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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-21-21/11:00/U1&2/5b

4	Combine 04/21/202		Time	ole Type Sampled ered by	Truck 1100 UPS		Time Rece	Received Received ived by ample #	05/14/ 1130 LLB 36688	2021 -5 TOT
Parameter		Resu	ilt	Result	Unit	Dilution	DL	Metho	od	Date
		As Rece	ived	Dry Basis						
Chromium, Total		59.9)	77.3	mg/kg	25	0.1	EPA 3051	6020B	05/25/21
Arsenic, Total		10.9)	14.1	mg/kg	25	0.1	EPA 3051	6020B	05/25/21
Selenium, Total		< 2.3	6	< 3.05	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Silver, Total		4.79	}	6.18	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Cadmium, Total		6.53		8.43	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Barium, Total		943		1217	mg/kg	50	0.1	EPA 3051/	6020B	05/25/21
Lead, Total		350		452	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Mercury, Total		0.25	3	0.326	mg/kg	2	0.2	EPA 3051/	7470A	05/27/21
Hexavalent Chromiur	n, Total	0.21	3	0.281	mg/kg	10	0.010	EPA 30	60A	05/26/21
Total Volatile Residue	€	5.38			%			SM2540	G/E	05/24/21
pH, as received		12.20	3		SU			EPA 90-	45D	05/24/21
Solids		77.5			%			SM254	0G	05/17/21
Moisture		22.5			%			SM254	0G	05/17/21

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Page 10 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-22-21/22:30/U1&2/6c

	ombined Ash 4/22/2021	Sample Time S Deliver	ampled	Truck 2230 UPS		Date Received Time Received Received by	05/14/2021 1130 LLB
Extraction Begun 05	5/17/21 1630	Extract	ion Ended	05/18/21	0900	E1 Sample #	36688-6
Parameter	Resi	alt Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP digest	ted 0.06	7 mg/L	0.05	50	0.001	EPA 1311/60:	20B 05/20/21
Arsenic, TCLP digested		-	_	50	0.001	EPA 1311/60	20B 05/20/21
Selenium, TCLP digeste				50	0.001	EPA 1311/60	20B 05/20/21
Silver, TCLP digested	< 0.0			50	0.001	EPA 1311/60	20B 05/20/21
Cadmium, TCLP digeste	ed < 0.0	_		50	0.001	EPA 1311/60	20B 05/20/21
Barlum, TCLP digested	0.47			50	0.001	EPA 1311/60	20B 05/20/21
Lead, TCLP digested	< 0.0	_		50	0.001	EPA 1311/60:	
Mercury, TCLP digested	i < 0.000)4 mg/L	0.0004	2	0.0002	EPA 1311/74	70A 05/19/21
Solids	79	.9 %				SM2540G	05/17/21
pH, Initial	12.9	7 SU				EPA 1311	05/17/21
Fluid Determination pH	11.9					EPA 1311	05/17/21
TCLP pH, Final	9.2					EPA 1311	05/18/21
pH, Extraction Fluid #2	2.8					EPA 1311	05/17/21

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Page 11 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-22-21/22:30/U1&2/6c

Sample Matrix Date Combined Sampler	Combined Ash 04/22/2021	Sample Type Time Sampled Delivered by	Truck 2230 UPS	Date Received Time Received Received by E1 Sample #	05/14/2021 1130 LLB 36688-6 TOT
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Parameter	Result	Result	Unit	Dilution	DL	Method	Date
	As Received	Dry Basis					
Chromium, Total	41.1	51.4	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Arsenic, Total	17.1	21.4	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Selenium, Total	< 2.49	< 3.12	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Silver, Total	2.63	3.29	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Cadmium, Total	13.0	16.3	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Barium, Total	274	343	mg/kg	25	0.1	EPA 3051/6020B	05/25/21
Lead, Total	954	1194	mg/kg	50	0.1	EPA 3051/6020B	05/25/21
Mercury, Total	0.562	0.703	mg/kg	2	0.2	EPA 3051/7470A	05/27/21
Hexavalent Chromium, Total	< 0.198	< 0.248	mg/kg	10	0.010	EPA 3060A	05/26/21
Total Volatile Residue	4.71		%			SM2540G/E	05/24/21
pH, as received	12.35		SU			EPA 9045D	05/24/21
Solids	79.9		%			SM2540G	05/17/21
Moisture	20.1		%			\$M2540G	05/17/21

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Page 12 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by COV Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36688

Covanta Honoiulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-23-21/04:30/U1&2/7a

	bined Ash 3/2021	Sample Time Sa Delivere	ampled	Truck 0430 UPS		Time Received	05/14/2021 1130 LLB
Extraction Begun 05/1	7/21 1630	Extraction	on Ended	05/18/21	0900	E1 Sample #	36688-7
Parameter	Result	Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP digested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/602	20B 05/20/21
Arsenic, TCLP digested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/602	20B 05/20/21
Selenium, TCLP digested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/602	20B 05/20/21
Silver, TCLP digested	< 0.05	mg/L	0.05	50	0.001		
Cadmium, TCLP digested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/602	20B 05/20/21
Barium, TCLP digested	0.493	mg/L	0.05	50	0.001	EPA 1311/602	20B 05/20/21
Lead, TCLP digested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/602	20B 05/20/21
Mercury, TCLP digested	< 0.0004	mg/L	0.0004	2	0.0002		OA 05/19/21
Solids	79.1	%				SM2540G	05/17/21
pH, Initial	12.77	SU				EPA 1311	05/17/21
Fluid Determination pH	11.57	SU				EPA 1311	05/17/21
TCLP pH, Final	8.02	SU				EPA 1311	05/18/21
pH, Extraction Fluid #2	2.86	SU				EPA 1311	05/17/21

Ken Smith, Laboratory Director

Page 13 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by (600) Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021 Client Project Name 2Q21 Units 1&2 Ash Sampling Client Project Number

Sample ID: HON/CA/04-23-21/04:30/U1&2/7a

Sample Matrix Combined Date Combined 04/23/20 Sampler		Time	ole Type Sampled ered by	Truck 0430 UPS		Time Recei	Received Received ved by imple #	05/14/2 1130 LLB 36688-	
Parameter	Resu	ılt	Result	Unit	Dilution	DL	Meth	od	Date
	As Rece	eived	Dry Basis						
Chromium, Total	66.7	,	84.3	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Arsenic, Total	19.8	}	25.0	mg/kg	25	0.1	EPA 3051.	/6020B	05/25/21
Selenium, Total	< 2.2	8	< 2.88	mg/kg	25	0.1	EPA 3051.	/6020B	05/25/21
Silver, Total	< 2.2	8	< 2.88	mg/kg	25	0.1	EPA 3051.	/6020B	05/25/21
Cadmium, Total	15.3	}	19.3	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Barium, Total	460	ı	582	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Lead, Total	1723	2	2177	mg/kg	10 0	0.1	EPA 3051	/6020B	05/25/21
Mercury, Total	0.49	5	0.626	mg/kg	2	0.2	EPA 3051	/7470A	05/27/21
Hexavalent Chromlum, Total	0.25	5	0.322	mg/kg	10	0.010	EPA 30	60A	05/26/21
Total Volatile Residue	3.76	;		%			SM2540	G/E	05/24/21
pH, as received	12.0	1		SU			EPA 90	45D	05/24/21
Solids	79.1	ļ.		%			SM254	IOG	05/17/21

Ken Smith, Laboratory Director

20.9

Moisture

Page 14 of 20

05/17/21

SM2540G

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by 1/2 \(\frac{1}{2} \) \(\frac{1}{2} \) Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604

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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-23-21/12:45/U1&2/8b

Sample Matrix Date Combined Sampler	Combined Ash 04/23/2021	Sample Time S Deliver	ampled	Truck 1245 UPS		Date Received Time Received Received by	05/14/2021 1130 LLB
Extraction Begun	05/17/21 1630	Extract	ion Ended	05/18/21	0900	E1 Sample #	36688-8
Parameter	Resu	lt Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dig	ested < 0.0	5 mg/L	0.05	50	0.001	EPA 1311/60	20B 05/20/21
Arsenic, TCLP digest		_		50	0.001	EPA 1311/60	20B 05/20/21
Selenium, TCLP dige				50	0.001	EPA 1311/60	20B 05/20/21
Silver, TCLP digester	d < 0.0	5 mg/L	0.05	50	0.001		
Cadmium, TCLP dige	ested < 0.0	5 mg/L	0.05	50	0.001	EPA 1311/60	
Barium, TCLP digest	ed 0.48	0 mg/L	0.05	50	0.001		
Lead, TCLP digested	< 0.0	5 mg/L	0.05	50	0.001		
Mercury, TCLP diges	ted < 0.000	4 mg/L	0.0004	2	0.0002		
Solids	78.	7 %				SM2540G	05/17/21
pH, Initial	12.9	9 SU				EPA 1311	05/17/21
Fluid Determination p	H 8.5	0 SU				EPA 1311	
TCLP pH, Final	9.4	2 SU				EPA 1311	
pH, Extraction Fluid #	[‡] 2 2.8	6 SU				EPA 1311	05/17/21

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Page 15 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by WY Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-23-21/12:45/U1&2/8b

Sample Matrix Comb Date Combined 04/23/ Sampler	ined Ash /2021	Time	ole Type Sampled ered by	Truck 1245 UPS		Time Rece	Received Received ived by ample #	05/14/ 1130 LLB 36688	2021 -8 TOT
Parameter	Resi	ult	Result	Unit	Dilution	DL	Metho	bd	Date
	As Rece	eived	Dry Basis						
Chromium, Total	39.4	1	50.1	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Arsenic, Total	19.2	2	24.4	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Selenium, Total	< 2.1	7	< 2.76	mg/kg	25	0.1	EPA 3051/		05/25/21
Silver, Total	2.54	1	3.23	mg/kg	25	0.1	EPA 3051/		05/25/21
Cadmium, Total	17.6	3	22.7	mg/kg	25	0.1	EPA 3051/	6020B	05/25/21
Barium, Total	284	•	361	mg/kg	25	0.1	EPA 3051/		05/25/21
Lead, Total	773	;	982	mg/kg	50	0.1	EPA 3051/0	6020B	05/25/21
Mercury, Total	0.70	6	0.897	mg/kg	2	0.2	EPA 3051/	7470A	05/27/21
Hexavalent Chromium, Tot	al < 0.19	94	< 0.247	mg/kg	10	0.010	EPA 306	SOA	05/26/21
Total Volatile Residue	5.52			%			SM2540	G/E	05/24/21
pH, as received	12.1	0		SU			EPA 904	15D	05/24/21
Solids	78.7	•		%			SM2540)G	05/17/21
Moisture	21.3	}		%			SM2540)G	05/17/21

Ken Smith, Laboratory Director

Page 16 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021 Client Project Name 2Q21 Units 1&2 Ash Sampling Client Project Number

Sample ID: HON/CA/04-28-21/15:15/U1&2/9c

Sample Matrix Date Combined Sampler	Combine 04/28/20		Sample Time Sa Delivere	mpled	Truck 1515 UPS		Date Received Time Received Received by	05/14/2021 1130 LLB	l
Extraction Begun	05/17/21	1630	Extraction	on Ended	05/18/21	0900	E1 Sample #	36688-9	
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method	Da	te
Chromium, TCLP dig	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/20	0/21
Arsenic, TCLP digest		< 0.05	-	0.05	50	0.001	EPA 1311/60	20B 05/20	0/21
Selenium, TCLP dige	sted	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60:	20B 05/20	0/21
Silver, TCLP digested	d d	< 0.05	mg/L	0.05	50	0.001			0/21
Cadmium, TCLP dige	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60		
Barium, TCLP digeste	ed	0.484	mg/L	0.05	50	0.001			0/21
Lead, TCLP digested		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60:	20B 05/20	0/21
Mercury, TCLP diges	ted <	0.0004	mg/L	0.0004	2	0.0002			9/21
Solids	-	77.1	%				SM2540G	05/17	7/21
pH, Initial		12.99	SU				EPA 1311	05/17	7/21
Fluid Determination p	H	11.83	SU				EPA 1311		7/21
TCLP pH, Final		9.98	SU				EPA 1311		
pH, Extraction Fluid #	‡ 2	2.86	SU				EPA 1311	05/17	7/21

Ken Smith, Laboratory Director

Page 17 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Compiled by Compiled



Element One Inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

Phone: 910 793-0128 Fax: 910 792-6853 e1lab@e1lab.com

SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-28-21/15:15/U1&2/9c

Canania Time

•	Combine 04/28/20		Time	ole Type Sampled ered by	Truck 1515 UPS		Time Rece	Received Received ived by ample #	05/14/ 1130 LLB 36688	2021 -9 TOT
Parameter		Resu	ılt	Result	Unit	Dilution	DL	Method		Date
Chromium, Total Arsenic, Total		As Reco	7	90.4 31.1	mg/kg mg/kg	25 25	0.1 0.1	EPA 3051/ EPA 3051/	6020B	05/25/21 05/25/21
Selenium, Total Silver, Total		< 2.4 8.03	3	< 3.13 10.4	mg/kg mg/kg	25 25	0.1 0.1	EPA 3051/9	6020B	05/25/21 05/25/21
Cadmium, Total Barium, Total		31.1 454		40.3 589	mg/kg mg/kg	25 25	0.1 0.1	EPA 3051/0	6020B	05/25/21 05/25/21
Lead, Total Mercury, Total		1420 0.57	2	1852 0.742	mg/kg mg/kg	100 2	0.1 0.2	EPA 3051/ EPA 3051/		05/25/21 05/27/21
Hexavalent Chromiur Total Volatile Residue	•	< 0.19 4.48	}	< 0.250	mg/kg %	10	0.010	EPA 306 SM2540		05/26/21 05/24/21
pH, as received Solids		12.1 7 7.1			SU %			EPA 904 SM2540	. –	05/24/21 05/17/21
Moisture		22.9)		%			SM2540	OG	05/17/21

Ken Smith, Laboratory Director

Page 18 of 20

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Phone: 910 793-0128 Fax: 910 792-6853 e1lab@e1lab.com

elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36688

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021 Client Project Name 2Q21 Units 1&2 Ash Sampling Client Project Number

Sample ID: HON/CA/04-29-21/09:35/U1&2/10a

Sample Matrix Date Combined Sampler	Combine 04/29/20		Sample Time Sa Delivere	ampled	Truck 0935 UPS		Date Received Time Received Received by	05/14/2021 1130 LLB
Extraction Begun	05/17/21	1630	Extraction	on Ended	05/18/21	0900	E1 Sample #	36688-10
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dig	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/20/21
Arsenic, TCLP digest		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/20/21
Selenium, TCLP dige		< 0.05		0.05	50	0.001	EPA 1311/60	20B 05/20/21
Silver, TCLP digested		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/20/21
Cadmium, TCLP dige		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/20/21
Barium, TCLP digeste		0.470	_	0.05	50	0.001	EPA 1311/60	20B 05/20/21
Lead, TCLP digested		< 0.05	•	0.05	50	0.001	EPA 1311/60	20B 05/20/21
Mercury, TCLP diges		< 0.0004	-	0.0004	2	0.0002	EPA 1311/74	70A 05/19/21
Solids		75.4	_				SM2540G	05/17/21
pH, Initial		12.99	SU				EPA 1311	05/17/21
Fluid Determination p	Ή	12.18	SU				EPA 1311	05/17/21
TCLP pH, Final		9.78	SU				EPA 1311	05/18/21
pH, Extraction Fluid #	! 2	2.86	SU				EPA 1311	05/17/21

Ken Smith, Laboratory Director

Page 19 of 20

36688 Covanta Honolulu Quarterly Report 1-10 Complied by Certifications: NJ NELAP NC009, NY ELAP 11889, NC DW 37788 and NC DWQ DENR 604



Phone: 910 793-0128 Fax: 910 792-6853 e1lab@e1lab.com

SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36688

Covanta Honofulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 May 27, 2021

Client Project Name 2Q21 Units 1&2 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-29-21/09:35/U1&2/10a

Sample Matrix Date Combined Sampler	Combine 04/29/20)21 Time		ple Type Sampled ered by	Truck 0935 UPS		Time Recei	Received Received ved by ample #	05/14/ 1130 LLB 36688	2021 -10 TOT
Parameter		Res	ult	Result	Unit	Dilution	DL	Meth	bd	Date
		As Rec	eived	Dry Basis						
Chromium, Total		35.	В	47.9	mg/kg	25	0.1	EPA 3051.	/6020B	05/25/21
Arsenic, Total	- 2	12.4	4	16.4	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Selenium, Total		< 2.4	43	< 3.22	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Silver, Total		12.	1	16.0	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Cadmium, Total		13.4	4	17.8	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Barium, Total		224	1	297	mg/kg	25	0.1	EPA 3051	/6020B	05/25/21
Lead, Total		674	1	894	mg/kg	50	0.1	EPA 3051.	/6020B	05/25/21
Mercury, Total		0.38	1	0.505	mg/kg	2	0.2	EPA 3051.	/7470A	05/27/21
Hexavalent Chromiu	ım, Total	< 0.1	94	< 0.257	mg/kg	10	0.010	EPA 30	60A	05/26/21
Total Volatile Residu	ne	4.79	9		%			SM2540		05/24/21
pH, as received		12.1	9		SU			EPA 90		05/24/21
Solids		75.	4		%			SM254	_	05/17/21
Moisture		24.0	6		%			SM254	l0G	05/17/21

Ken Smith, Laboratory Director

Page 20 of 20

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COVANTA

CHAIN OF CUSTODY - ASH

Designed for thesis

Lab 10# 36688

Facility Coverta Honolulo Harower POI Report to (Email) kasato Otovahta zbin + Pariol 10 covners covanta com 91-174 Banus Street, Kapplet Bl 36707 Address Billing information, traillerer +Entail 10 808-426-0852 108-682-5208 2021 Units 182 Ash Sampling Contact Name Katelyn Asato Email consiste property com Phon Pex Profect St. Delivery Date 1-Day 2.0ev 300 naturations. Use legand shows below to identify Purpose, Sample Location, Ach Type and Sample Type, For charges to tisk form, contact the Complete Ash Team, "RSD samples are. Analysiss Requested Mater: not entered in to EMIS Belimble Location **经济发展的** Bemple Type Porpose. Ach Type Combined Astr. CA Sexavalent Cr 3060A / 7/99 Self- FELS Promiting Lightler Gemposite-Offer : Characterba **基金** Physics (MX 1 or the 3 perfored physics of that annotes SE TCLP (A) Proper compan, solving Fashing with pill paths to completely pline broughes: 811.0 Topesa Knowledge Bottom Astr B& Grate GR Moisture RAD. Ston Sto Fly Airli FA ANGER .. ISBNO Polysia. Purto Sample: RS Druck TB Dust Markin Daly: DC TO PEND PH Alternation Day Sharaki CLF Metals 3-62 %-Volaties, DH 9045 Sample Collection Ref Bingte (Doll Librit (S-Oglif addy-arriye) (India) S Container **Strntile** Remarks Lotation Signatia A Start Date. Start Three (1) Sample Type Affauct No. Ash Type Please pick 1 of 3 eliquels to analyze HON FOX FOX 18-21 7-04:00 / U1827 14 Characteria 4719/2021 **400 AM** CA 4 -1 4 TR 1 HONT GATOLIS 21 (0430 LUTES 1 16 GA 1 12 ·V19/2021 4200 AB 1 Characterize TIT. 3 HENVOA/98-19-2170490/U/82/10 4/19/2021 ADQ AM CA 1 Please pick for 3 allowers in ensives HON FOAT OLD 9-217 24-28 TUBBS / 24 Characterize Pla : CÁ 7-10 4/19/2021 9:28 PM × 1 HON / CA HOL-19-21 / 21:26/U182/26 Pla TH 1 . 2 4/19/2021 TO PU CA 1 4/9/2021 HON/CA/01-19-21/24-28/0182/26 Characterize Pin CA 1 9:25 PM TR 4 240 AV or Presse pick 1 of 3 allouous foreneityze HON / GA / 61-20-21 / 02/07 / U182 / 3a Pile CA TR 4/20/2021 n. x HOR / CA (04-20-21 FQ200 / U182 / 35 Characterize TR * .2 4/20/2021 240 AM 4 Plo CA . A/20/2021 HOR / CA704-20-E1-02001-0162-130-Characteriza Pile CA TH 1 3 2.40 AM 1 TR X Please pick 1 of 3 alloyats to evalue Characoutzo Pile A/21/2021 9:00 AM X × ķ HON / CR / 08-21-217 09:00 / U182 / 4s 1 BA 1 4 HON/CA/04-21-21-109:00/U1827-45 4/21/2021 9:00 AM 2 Cheracienze Phi CA TR T. 1 Cherocharian 12 HOR/OA/04/21/21/06/0/ U182/46 1 5 4/21/2021 Pfle CA TR 1 990 AN 1 HGR/GA/04-21-21/1100/U182/5a 4/21/2021 MAYOCER XX × x Please pick 1 of 3 eliquets to enalyze Characterize Me CA. ΤŔ á - 1 # × × HON/CA/04-21-21/11:00/UHA29-56 Characterize 2 4/21/2021 TOO AM Ť Pile CA TR 1 CA 1 1 4/21/2021 TEDO AM HON / CA/04-21-21 / 11:00 / U182 / 5c 1 Chereclerize Pile TR .1 11:00 Dolo 5-12-21 Relinguished by Signature Date 5,14,25 1130 Received by Timo Signature Leb Notes

COMENTA

CHAIN OF CUSTODY - ASH

Lab 10# 36688

Coventa Honolulu IS-Power «Email ID. POI Report to (Enter) KASHO PUNYANTA COM covneracovanta.com 4d-174 Hanus Street, Kapolei Ht 36707 Elling Information; If different Address + Ethal ID 808-426-0852 808-682-3203 Katelyn Asato 2021 Units 182 Ash Sampling Contact Name Empl kassto@revanta.com Delivery Date TAT (since met) Proposed Rosks. 2 039 3-Deg 1-Day Instructions: One learns shown below to identify Polycole, Sample Location, Ash Type and Sample Type. For changes to file form, contact the Corporate Ash Team, "RED samples and Analyses Requested not entered in to ENIS Motion: Ash Type Sample Type. Purpose Semple Location Charticlerize FEE FrontEnd Literal Combined Asia CA Composite Hexavalent Cr. 3060A / 7199 の表 (本) (47.1) ルール 三 (47.1) Please pills. I of the O provious absluces to find emerges for TCSP pint, Pleaser compact solar or Karelyn with an prior to completely other analysis. Process Knowledge Truck %-Volatiles, Nidisture RAD Subject Blad --- The Fly Ash; FA (\$ATHO Contestor To Cotel Metals 6020 Diest Master BEE Day DC Truck TR B CLP FIELD THICK PROCESO DAY BRICAN CLP Wetsts 19 7470A OH SDGS Sample Collection Semicle Sample (I) on Libe! O Digital Disk Production Simple Dication Ref Collection Contributer Ach Type Remarks No. Start Date Blant Time (10) Calmidation HOM / GA / 64-22/27 / 22:30 / U18/2 / 6a 1 CA W2212021 TR 10:30 PM 2) Please pick 1 of 3 efforcis for Brieflyze: 4 Characterize CA Pie RON/ GAT 04-22-21/22-30-(1)162/66 TR L 1 1/22/2021 10:30 FM i Cheracietre HON 1 CA 1 04-32-21 / 22:30 1 0182 / 66 Pile TR 10:30 PS LA. 1 3 122/2021 i Chargolphio X Please pick f of 3 eliquois to shally its 19 HONE GAY 04-28-21/ 04:30 14142 776 -Pia -CA 15 0 4/23/2021 4:30744 1 TR T ... ACHTCA7092821704307U182776 Charles 196 CA 3 (23/202) A20 AM TR 1 1 RONFCA704-23-21 10420 t LT82-176 (Ne CA. 1 1/23/2021 430 AM TR 3 1 Me 22 HONE/ DA / 04/23/21/ 12/45/19/82/ 04 CA TR 2 1 4/23/2021 12:45 PM X Place Sick 1 of 3 elloupts to maryze Ŧ 1 21. HON/CA/04/23/21/12/45/U142/16 Pile CA. TR .7 4/23/2021 12:45 PM 1 15 2A HON/CA/0423-21/12-45/1482/86 Chartelinto TR 4/23/2021 Pile DX. 1 3 12:45 PM 4 25 RON CAJ 04-28-21 15-16 (U182 / On Champiertos Ple CA TR 1 4/28/2021 3:15.PM X X Please pick 1 of 3 sliquots to analyze 1 X * Characteriza HON/GA/0428-21/15/18/U182198 1 1 2 Pfn. CA tR 4/28/2021 3:15 PM 1 Characteriza HON/ CA/0/528-21/15/15/U482/96 Ple CA TR 1/28/202 3:15 PM 1 1 2 3 TR Characterize 4/28/202 XX HON / GA / 04-29-21 / 09:35 / U182 / 108 Pile CA 1 1 9:35 AU 4 × 1 XX X - Please plot 1 of 3 effects to snalyze HON/GA/04/25/21/09:35/USEZ-1106 Cheracteriza 4/29/202 A-35 AM i Pile CA TR 3 2 HON 7-CA / 04-29-21-J 08:35 / UH&21 100 4/29/2021 Cheraclerizo Påe. CA 1 3 9:35 AM TR 1 Retriguished by Bate 5-12-21 11100 Time Signabili Received by Date 5,14,11 Time 1130 Signatur Lab Notes

APPENDIX B

Pace Analytical Services, LLC. Laboratory and QA/QC Results



Pace Analytical Services, LLC.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

hone: 612.607.1700 Fax: 612.607.6444

Report Prepared for:

Katelyn Asato Covanta 91-174 Hanua St. Kapolei HI 96707

> REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Prepared Date:

May 27, 2021

Report Information:

Pace Project #: 10560322

Sample Receipt Date: 05/14/2021

Client Project #: Q2-2021 RDF Ash Sampling

Client Sub PO #: HONOL-0000081557

State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Ashley Williams, your Pace Project Manager.

This report has been reviewed by:

June 02, 2021

Ashley Williams, Project Manager

(612) 346-8158

(612) 607-6444 (fax)

ashley.williams@pacelabs.com



Report of Laboratory Analysis

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The results relate only to the samples included in this report.



Pace Analytical Services, LLC.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700

Fax: 612.607.6444

<u>DISCUSSION</u>

This report presents the results from the analysis performed on one sample submitted by a representative of Covanta. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. Estimated maximum possible concentration (EMPC) values were treated as positives in the toxic equivalence calculations. The sample was received above the recommended temperature range of 0-6 degrees Celsius.

Second column confirmation analyses of 2,3,7,8-TCDF values obtained from the primary (DB5-MS) column are performed only when specifically requested for a project and only when the values are above the concentration of the lowest calibration standard. Typical resolution for this isomer using the DB5-MS column ranges from 25-30%.

The isotopically-labeled PCDD/PCDF internal standards in the sample extract were recovered at 49-92%. All of the labeled internal standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field sample.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standard materials. The results show that the native compounds were recovered at 90-120%. These results were within the target range for the method. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

The responses obtained for selected labeled congeners in calibration standard analysis U210523B_18 were outside the target range. As specified in our procedures for this method, the averages of the daily response factors for these compounds were used in the calculations for the samples from this runshift. The affected values were flagged "Y" on the results tables. It should be noted that the accuracy of the native congener determinations was not impacted by these deviations.

REPORTOFLABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
		Missouri	10100
A2LA	2926.01	Montana	CERT0092
Alabama	40770	Nebraska	NE-OS-18-06
Alaska-DW	MN00064	Nevada	MN00064
Alaska-UST	17-009	New Hampshire	2081
Arizona	AZ0014	New Jersey	MN002
Arkansas - WW	88-0680	New York	11647
Arkansas-DW	MN00064	North Carolina-	27700
California	2929	North Carolina-	530
Colorado	MN00064	North Dakota	R-036
Connecticut	PH-0256	Ohio-DW	41244
Florida	E87605	Ohio-VAP (170	CL101
Georgia	959	Ohio-VAP (180	CL110
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon- rimary	MN300001
Illinois	200011	Oregon-Second	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
lowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky-DW	90062	Tennessee	TN02818
Kentucky-WW	90062	Texas	T104704192
Louisiana-DEQ	AI-84596	Utah	MN00064
Louisiana-DW	MN00064	Vermont	VT-027053137
Maine	MN00064	Vir g inia	460163
Maryland	322	Washington	C486
Michigan	9909	West Virginia-D	382
Minnesota	027-053-137	West Virginia-D	9952C
Minnesota-Ag	via MN 027-053	Wisconsin	999407970
Minnesota-Petr	1240	Wyoming-UST	via A2LA 2926.
Mississippi	MN00064		

REPORTOF LABORATORY ANALYSIS

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Appendix A

Sample Management

Pace Analytical*			STODY AT	67.00	10.70					er.	LAB USE	ONLY- Af	fix Worl	4					560322 	
Company: Covanta Hpower			Billing Informat	tion:								ALL	SHAD	E	PAR	 32		E-811	0.010.016	
Address: 91-174 Hanua Street, Kapolei	i, HI 96707		Same					1			Conta	iner Prese		_			-	10 F4U	erramenegers	68
Report To: Katelyn Asato			Email To: kasat	o@covanta	.com				- Press		- Tomas: (1) nitele acie	(2) multi-	de acie	(2) by		Inde set		dium hydroxide, (5) zinc acetate,	
Сору То:	· · · · · · · · · · · · · · · · · · ·		Site Collection	Info/Addre	ss: 91-174 F	lanua Street	, Kapolei,	н	(6) meth	hanol,	(7) sodiun		(8) sodiur	n thiosi	alfate, (9) hes			c acid, (B) ammonium sulfate,	
Customer Project Name/Number: Q2-	2021 RDF Ash Sa	mpling	96707 State: Cour	nty/City:	Time Zor	ne Collected:			-	_		Anal	yses	7	_	- 1			file/Line:	
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hone: (908)-426-0832	Site/Facility ID	# :			C156.757	e Monitoring [] No	?							1	1				y Signatures Present tor Signature Present	
mail: kasato@covanta.com Collected By (print): Katelyn Asato	Purchase Order			-	-			\dashv	a				1 1		- 1		1	ottle	s Intact	YNNA
collected by (print), katelyn Asato	Quote #:				DW PWS ID #: DW Location Code:				TEO					*	1	1	10	mirri.	i ent Volume	YNNA
Collected By (signature):	Turnaround Da	te Required	I: N/A	Immediately Packed on Ice: [] Yes [X] No				with								1	oa -	Received on Ice		
Sample Disposal: [X] Dispose as appropriate [] Return [] Archive:	[] 2 Day [[] Next Day] 4 Day [X] rges Apply)	5 Day	Fleid Filten	ed (if-applica [] No	ble):		8290T-O								1	USDA Regulated Soils Y N N Samples in Holding Time Y N N Residual Chlorine Present Y N N Cl Strips: Sample pH Acceptable Y N N pH Strips: Sulfide Present Y N N		
Matrix Codes (Insert in Matrix box b Product (P), Soil/Solid (SL), Oil (OL),									Furans									ead.	Acetate Stripe:	YNHA
Customer Sample ID	Matrix *	Comp / Grab	Collected (or Star	672	Compo	osite End	Res	# of Ctns				Lead Acetate Strips:								
			Date	Time	Date	Time			ă							4				2.3
RDF Q2-2021 Ash Sample	OT	COMP	5-12-21	10:00				1	X			_		X.				· db ·	10 - OUI -	200
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Customer Remarks / Special Condition	ons / Possible Haz	ards:	Type of Ice U Packing Mate		Wet 8	lue Dry	None				Trackin							6-	AB Sample Temperature Info Temp Blank Received: Y Therm IDN: T3 Cooler 1 Temp Upon Rece	(B) H
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Pace Analytical*

Document Name:

Sample Condition Upon Receipt (SCUR) - MN

Document No.: ENV-FRM-MIN4-0150 Rev.02 Document Revised: 14Apr2021

Page 1 of 1

Pace Analytical Services-Minneapolis

Sample Condition Client N Upon Receipt	lame:			Project	#:	MOH	t · 10	5603	322	
Cov	anta Houser					MOT	1.10			
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Pace	SpeeDee	Commer			_	CLIENT	: COV			
Tracking Number: 12	VX 683 02 93	354 34	45 EN	e Exceptio						
Custody Seal on Cooler/Box F	Present? Yes	No	Sea	ils Intact	? ⊠Y	es 🔲 N	o Bield	ogical Tissue	Frozen?	Yes □No 図N/A
Packing Material: Bubbl			None	⊠Oth	er:_Pa	ne c		Temp	Blank? []Yes ⊠No
	T2(1336) T3(0459)	☐05418 ☐16028		Type of Ice:	□Wet	□Blue	None	Dry	Melted	
Did Samples Originate in West	Virginia? ☐Yes ☑No	We	re All Co	ntainer 1	emps T	iken? □Ye	s 🗆 No 🛭	N/A		
Temp should be above freezing to 6'	Cooler Temp Re	ad w/ten	np blank		21.0		°C	Average Co		See Exceptions
Correction Factor: -0.5	Cooler Temp Correcte	d w/tem	p blank:		20.5	·	°C		0.5 °C	☑1 Container
USDA Regulated Soil: (🗹 N/A,	water sample/Other:	336						mining Conte		
Did samples originate in a quarar						samples ori rall and Pue		a foreign sourc ∐Yes	e (Internation ⊡No	nally, including
ID, LA. MS, NC, NM, NY, OK, OR,	SC, IN, IX or VA (check m ther question, fill out a	aps) r – į Regulate:		No ecklist (f				_		
11 123 10 11	ino decorrory in ouco							COMMENT		
Chain of Custody Present and Fille	d Out?	⊠Yes	□No		1.					
Chain of Custody Relinquished?	u 04.,	✓Yes	No		2.					
Sampler Name and/or Signature of		≥Yes	□No	□N/A	3.					
Samples Arrived within Hold Time	?	K Yes	No		4.					
Short Hold Time Analysis (<72 hr)	?	□Yes	No		5.	Fecal Colifor Turbidity	m	Total Coliform/I trite Orthopi	coliBOD/ nosOther	c8OD Hex Chrome
Rush Turn Around Time Requeste	ed?	Yes	⊠No		6.					
Sufficient Volume?		Yes	No		7.					
Correct Containers Used?		ĭ₹Yes	□No		8.					
-Pace Containers Used?		Yes	No No		9.					
Containers Intact? Field Filtered Volume Received for	Dissalved Torte?	□Yes	□No	⊠N/A		sediment	visible in the	e dissolved co	ntainer?	res No
Is sufficient information available			INO	EJIT/A				Container Bek		See Exception
to the COC?		 ≰ Yes	□No				,			ENV-FRM-MIN4-0142
Matrix: Water Soil Oll 20 All containers needing acid/base p		(T)v		5 1/2	12. Sar	nple#				
checked?	16261A97IOH USAG DESII	∐Yes	□No	⊠N/A	12. 301	ipie ir				
All containers needing preservatio	ation?	∐Yes	□No	⊠N/A		☐ NaOH	□н	NO ₃]H₂SO₄	Zinc Acetate
(HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Suf	fide, NaOH>10 Cyanide)				Pariely	for Res.]Yes			See Exception
Exceptions: VOA, Coliform, TOC/Do	OC Oil and Grease.	□Yes	□No	⊠ N/A	Chlorin	_]No	pH Paper Lo	t#	ENV-FRM-MIN4-0142
DRO/8015 (water) and Dioxin/PFA					Res. Ch		0-6 Roll		Strlp	0-14 Strip
Extra labels present on soil VOA or	WIDDO containers		· · · · ·	TETAL /A	12		L			See Exception
Headspace in VOA Vials (greater th		□Yes □Yes	□No □No	A\n/A ☑N/A	13.		_			ENV-FRM-MIN4-0140
Trip Blank Present?		Yes	□No	N/A	14.					
Trip Blank Custody Seals Present?		Yes	No	⊠N/A	P	ace Trip Bla	nk Lot # (If p			
CLIENT NOTIFICATION Person Contacted:	/RESOLUTION				Date	Time:		ld Data Requ		es No
Comments/Resolution:			-			-				
		lile	MM	~						
Project Manager Revie	w. ashley					Date:	5/17/21		Units Accessed	ALL ARIAN II
Note: Whenever there is a discrepan- hold, incorrect preservative, out of te	cy affecting North Carólina mp, incorrect containers).	complian	ce sample	s, a copy	or this for	m will be se	nt to the Nor	in Larolina DE	HMM FELTILICS	TO TUO 9.1) SOMEO MOIL

Labeled by: ____



Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interferencepresent
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDEInterference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %DExceeds limits
- Y = Calculated using average of daily RFs
- * = SeeDiscussion

REPORTOFLABORATORYANALYSIS

Appendix B

Sample Analysis Summary



Method 8290 Sample Analysis Results

Client - Covanta

RDF Q2-2021 Ash Sample Client's Sample ID Lab Sample ID 10560322001 U210523B_16 Filename BAL Injected By Solid Matrix **Total Amount Extracted** 10.0 g NA Dilution % Moisture 21.4 Collected 05/12/2021 10:10 **Dry Weight Extracted** 7.86 g Received 05/14/2021 17:29 U210423 ICAL ID Extracted 05/18/2021 14:30 U210523B 01 & U210523B_18 CCal Filename(s) Analyzed 05/23/2021 23:49 BLANK-90123 Method Blank ID

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	32 930		1.0 1.0	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	79 76 80
2,3,7,8-TCDD Total TCDD	7.6 200	=	1.0 1.0	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.00 2.00 2.00	80 80 89
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	48 80 990	=	5.0 5.0 5.0	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00 2.00	92 85 72 89
1,2,3,7,8-PeCDD Total PeCDD	32 440	=	5.0 5.0	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,7,8,9-HpCDF-13C	2.00 2.00 2.00	77 49 55 Y
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	92 98 140 32 960		5.0 5.0 5.0 5.0 5.0	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C 1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 4.00 2.00 2.00	62 Y 49 Y NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	32 70 46 860	=	5.0 5.0 5.0 5.0	2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	430 58 490		5.0 5.0 5.0	Total 2,3,7,8-TCDD Equivalence: 130 ng/Kg (Lower-bound - Using 2005	WHO Facto	ors)
1,2,3,4,6,7,8-HpCDD Total HpCDD	460 940	=	5.0 5.0			
OCDF OCDD	220 1100		10 10			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable NC = Not Calculated

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures. Y = Calculated using average of daily RFs

REPORTOFLABORATORYANALYSIS



Method 8290 Blank Analysis Results

Lab Sample Name Lab Sample ID Filename Total Amount Extracted ICAL ID

CCal Filename(s)

DFBLKCW BLANK-90123 F210521B_07 10.8 g F210425 F210521A_08 & F210522A_06

Matrix Dilution Extracted Analyzed Solid NA 05/18/2021 14:30

05/18/2021 14:30 05/21/2021 20:41

Injected By JRH

Native Isomers	Conc ng/Kg	EVPC ng/Kg	RL ng/Kg	internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND	_	1.0 1.0	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	58 61 65
2,3,7,8-TCDD Total TCDD	ND ND		1.0 1.0	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.00 2.00 2.00	59 76 58
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND		5.0 5.0 5.0	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00 2.00	66 60 57 62
1,2,3,7,8-PeCDD Total PeCDD	ND ND		5.0 5.0	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,7,8,9-HpCDF-13C	2.00 2.00 2.00	61 65 61
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	ND ND ND ND ND		5.0 5.0 5.0 5.0 5.0	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C 1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 4.00 2.00 2.00	66 55 NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND		5.0 5.0 5.0 5.0	2,3,7,8-TCDD-37Cl4	0.20	65
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	_	5.0 5.0 5.0	Total 2,3,7,8-TCDD Equivalence: 0.00 ng/Kg (Lower-bound - Using 2005	WHO Facto	ors)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		5.0 5.0			
OCDF OCDD	ND ND	_	10 10			

Conc=Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORTOF LABORATORY ANALYSIS



Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename **Total Amount Extracted**

ICAL ID CCal Filename(s)

Method Blank ID

LCS-90124 F210521B_02 10.4 g F210425

F210521A_08 & F210522A_06 **BLANK-90123**

Matrix Dilution Extracted Analyzed

Solid NA

05/18/2021 14:30 05/21/2021 16:45

المحقممتما	D	JRH
Injected	ВУ	JECT

Native Isomers	Qs (ng)	Qm (ng)	% Rec	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.22	110	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.0 2.0 2.0	60 67 67
2,3,7,8-TCDD Total TCDD	0.20	0.21	105	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.0 2.0 2.0	67 79 59
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	1.0 1.0	1.1 1.1	109 109	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C	2.0 2.0	64 61
Total PeCDF	1.0		100	1,2,3,7,8,9-HxCDF-13C 1,2,3,4,7,8-HxCDD-13C	2.0 2.0	61 64
1,2,3,7,8-PeCDD Total PeCDD	1.0	0.90	90	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,7,8,9-HpCDF-13C	2.0 2.0 2.0	63 66 62
1,2,3,4,7,8-HxCDF	1.0 1.0	1.2 1.1	120 112	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.0 4.0	66 47
1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF Total HxCDF	1.0 1.0 1.0	1.1	113 109	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.0 2.0	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.0 1.0 1.0	1.1 1.1 1.1	111 108 110	2,3,7,8-TCDD-37Cl4	0.20	71
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.0 1.0	1.1 1.1	111 114			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.0	1.1	108			
OCDF OCDD	2.0 2.0	2.1 2.0	103 101			

Qs = Quantity Spiked Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent) R = Recovery outside of target range

Y = RF averaging used in calculations Nn = Value obtained from additional analysis

NA = Not Applicable * = See Discussion



Method 8290 Spiked Sample Report

Client - Covanta

Client's Sample ID Lab Sample İD Filename **Total Amount Extracted ICAL ID** CCal Filename(s)

Method Blank ID

MBN Q2-2021 Ash Sample-MS 10562480001-MS U210603B_03

10.2 g U210423

U210603B 01 & U210603B 18 **BLANK-90395**

Solid Matrix Dilution NA Extracted

Analyzed

05/28/2021 12:30 06/03/2021 22:16 Injected By SMT

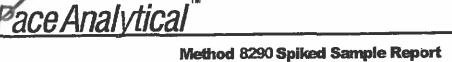
Rec. = Recovery (Expressed as Percent)

		•				
Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.40	199 R	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	58 35 R 76
2,3,7,8-TCDD	0.20	0.23	116	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.00 2.00 2.00	80 81 67
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	1.00 1.00	1.35 1.30	135 130	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00	69 68 67
1,2,3,7,8-PeCDD	1.00	1.11	111	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,7,8,9-HpCDF-13C	2.00 2.00 2.00 2.00	68 66 55 39 R
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.34 1.37 1.27	134 137 127	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 4.00	58 47
1,2,3,7,8,9-HxCDF	1.00	1.13	113	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.15 1.24 1.11	115 124 111	2,3,7,8-TCDD-37Cl4	0.20	31
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF	1.00 1.00	1.63 1.17	163 R 117			
1,2,3,4,6,7,8-HpCDD	1.00	1.61	161 R			
OCDF OCDD	2.00 2.00	1.52 4.12	76 R 206 R			

Qm = Quantity Measured Qs = Quantity Spiked Results reported on a dry weight basis and are valid to no more than 2 significant figures.

R = Recovery outside target range

REPORTOF LABORATORY ANALYSIS



Client - Covanta

Tel: 612-607-1700 Fax: 612-607-6444

Client's Sample ID Lab Sample ID Filename **Total Amount Extracted ICAL ID**

CCal Filename(s)

Method Blank ID

10562480001-MSD

U210603B_04

10.3 g U210423

U210603B_01 & U210603B_18 BLANK-90395

MBN Q2-2021 Ash Sample-MSD

Matrix Dilution

Solid NA

05/28/2021 12:30 Extracted Analyzed 06/03/2021 23:00

Injected By **SMT**

Method Blank ID	60	-1111-20035		injected by		
Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.65	323	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	66 44 84
2,3,7,8-TCDD	0.20	0.20	102	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.00 2.00 2.00	88 93 73
1,2,3,7,8-PeCDF	1.00	1.70	170	1,2,3,6,7,8-HxCDF-13C	2.00	78
2,3,4,7,8-PeCDF	1.00	1.48	148	2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00	75 73 77
1,2,3,7,8-PeCDD	1.00	1.24	124	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,7,8,9-HpCDF-13C	2.00 2.00 2.00	74 59 38 R
1,2,3,4,7,8-HxCDF	1.00	1.71	171	1,2,3,4,6,7,8-HpCDD-13C	2.00	62
1,2,3,6,7,8-HxCDF	1.00	1.55	155	OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	1.00	1.48	148		56	
1,2,3,7,8,9-HxCDF	1.00	1.22	122	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD	1.00	1.23	123	2,3,7,8-TCDD-37Cl4	0.20	39
1,2,3,6,7,8-HxCDD	1.00	1.33	133			
1,2,3,7,8,9-HxCDD	1.00	1.18	118			
1,2,3,4,6,7,8-HpCDF	1.00	2.32	232			
1,2,3,4,7,8,9-HpCDF	1.00	1.22	122			
1,2,3,4,6,7,8-HpCDD	1.00	2.12	212			
OCDF	2.00	2.31	116 275			
OCDD	2.00	5.49	210			

Qm = Quantity Measured Qs = Quantity Spiked

Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures. R = Recovery outside target range

REPORTOF LABORATORY ANALYSIS



Method 8290 Spike Sample Results

Client - Covanta

Client Sample ID Lab Sample ID MS ID

MSD ID

MBN Q2-2021 Ash Sample 10562480001

10562480001-MS 10562480001-MSD Sample Filename MS Filename MSD Filename U210603B_16 U210603B_03 U210603B_04 Dry Weights

Sample Amount 8.41 g MS Amount 8.4 g MSD Amount 8.5 g

	SampleQm	MS/MSD Qs	MS Qm	MSD Qm		Background Subtracted			
Analyte	(ng)	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD	
2,3,7,8-TCDF	0.45	0.20	0.40	0.65	47.5	0	98	200.0	
2,3,7,8-TCDD	0.00	0.20	0.23	0.20	12.3	116	102	12.3	
1,2,3,7,8-PeCDF	0.66	1.00	1.35	1.70	22.9	70	105	40.2	
2,3,4,7,8-PeCDF	0.51	1.00	1.30	1.48	13.4	79	98	21.0	
1,2,3,7,8-PeCDD	0.21	1.00	1.11	1.24	10.9	90	103	13.3	
1,2,3,4,7,8-HxCDF	0.52	1.00	1.34	1.71	23.7	82	118	36.1	
1,2,3,6,7,8-HxCDF	0.55	1.00	1.37	1.55	12.1	82	100	19.3	
2,3,4,6,7,8-HxCDF	0.38	1.00	1.27	1.48	15.1	89	109	20.9	
1,2,3,7,8,9-HxCDF	0.11	1.00	1.13	1.22	7.5	103	111	8.2	
1,2,3,4,7,8-HxCDD	0.10	1.00	1.15	1.23	6.2	105	113	6.7	
1,2,3,6,7,8-HxCDD	0.16	1.00	1.24	1.33	7.3	107	117	8.3	
1,2,3,7,8,9-HxCDD	0.13	1.00	1.11	1.18	5.9	98	105	6.7	
1,2,3,4,6,7,8-HpCDF	1.15	1.00	1.63	2.32	34.6	48	116	83.2	
1,2,3,4,7,8,9-HpCDF	0.13	1.00	1.17	1.22	4.2	104	109	4.7	
1,2,3,4,6,7,8-HpCDD	1.01	1.00	1.61	2.12	26.9	60	110	58.9	
OCDF	0.43	2.00	1.52	2.31	41.6	54	94	53.7	
OCDD	3.35	2.00	4.12	5.49	28.6	39	107	94.2	

Definitions

MS = Matrix Spike

MSD = Matrix Spike Duplicate

Qm = Quantity Measured

Qs = Quantity Spiked

% Rec. = Percent Recovery

RPD = Relative Percent Difference

NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin

CDF = Chlorinated dibenzo-p-furan

T = Tetra Pe = Penta

Hx = Hexa

Hp = Hepta

O = Octa

COVANTA HONOLULU RESOURCE RECOVERY VENTURE

Unit 3

2nd Quarter 2021 Ash Characterization Results

COVANTA INC. ENVIRONMENTAL DEPARTMENT

ENVIRONMENTAL TEST REPORT FOR HONOLULU RESOURCE RECOVERY VENTURE'S H-POWER UNIT 3

CEG REPORT NO.: 4515

REPORT DATE: June 16, 2021

Honolulu Resources Recovery Venture H-Power PREPARED FOR:

Characterization of Ash Residue from Unit 3 PURPOSE:

April 2021 SAMPLE PERIOD:

ASSOCIATED

Sampling Protocol Dated July 31, 1990 And EPA'S Final Guidance REPORTS:

PREPARED BY: Covanta, Inc.

Environmental Department

COMBINED ASH RESIDUE CHARACTERIZATION REPORT FOR HONOLULU RESOURCE RECOVERY VENTURE'S H-POWER UNIT 3

TABLE OF CONTENTS

SECTION	SUBJECT
1	INTRODUCTION
2	FIELD ASH SAMPLING PROCEDURES
3	LABORATORY INFORMATION
4	ASH SUBSAMPLE PREPARATION
5	ANALYTICAL PROCEDURES
6	DATA ANALYSIS
7	CONCLUSIONS
8	REFERENCES
TABLES	
1	Field Ash Sample Schedule and Bulk Characteristics
2	Laboratory Results and Statistics
3	Comparison of SW-846 Statistical Results and Regulatory Thresholds
	for Metal Analytes
APPENDICES	
Α	Element One, Inc. TCLP Analytical Report
В	Pace Analytical Services, Inc. Dioxin and Furan Analytical Report

1.0 INTRODUCTION

A combined ash residue characterization program was implemented for mass burn combustion Unit 3 at the H-Power Municipal Waste Combustor Facility located in Honolulu, Hawaii. The program was designed to be consistent with the Hawaii Department of Health's Solid Waste Management requirements for the management of ash residue from municipal waste incineration regulations. The sampling program was designed, conducted and consistent in accordance with the Combined Ash Sampling Protocol CHRRV Unit 3 Modification submitted August 12, 2016 to the State of Hawaii, Department of Health. This interim procedure was approved by the State of Hawaii, Department of Health. The modified program was designed to incorporate the analytical procedures in EPA's May 24, 1994 draft guidance document, "Sampling and Analysis of Municipal Refuse Incinerator Ash" (1) and its supporting document, "Test Methods for Evaluating Solid Waste" (SW-846). (2) The analytical program is consistent with the EPA's final guidance on ash sampling. (3) The ash samples were evaluated in accordance with the procedures set forth by the U.S. EPA Toxicity Characteristic Leaching Procedure (TCLP), Method 1311, as described in 40 CFR 261, Appendix II.

2.0 FIELD ASH SAMPLING PROCEDURES

Field sampling of the combined ash was performed by representatives of the facility at a location consistent with the designated sampling site in the approved sampling protocol and where representative samples could be safely obtained. Ten ash samples were collected during April 2021. The sample dates and associated sample labels for the ten samples ultimately analyzed are identified in Table 1.

3.0 LABORATORY INFORMATION

One subsample was generated from the ten individual composite ash samples that were collected during the ash characterization. This one composite sample was delivered to the Pace Analytical Services, LLC. laboratory for dioxin and furan analysis. The ten individual composite samples collected for TCLP metals determination were delivered to Element One Inc. for sample preparation and TCLP analysis for the eight RCRA metals as determined by EPA Method 1311. Both Element One Inc. and Pace Analytical Services, LLC. are NELAP and a NELAC accredited laboratories in several US States.

4.0 ASH SUBSAMPLE PREPARATION

When received at analytical lab Element One Inc., the ten ash samples were weighed

and screened through a 0.375" sieve to determine percent of material, plus and minus the sieve size and to do additional crushing as necessary. In addition to analyzing each sample for TCLP for the RCRA metals, an additional subsample from each of the ten ash samples was taken to determine the moisture content, percent volatile solids, laboratory pH, total RCRA metals and total hexavalent chromium.

Table 1 presents the laboratory preparation weights of the individual samples and the moisture results. The laboratory data used to develop Table 1 is provided in Appendix A.

5.0 ANALYTICAL PROCEDURES

The Toxicity Characteristic Leaching Procedure (TCLP) was performed in accordance with Method 1311 as detailed in the Environmental Protection Agency Manual SW-846 - Test Methods for Evaluating Solid Waste - Physical/Chemical Methods.

6.0 DATA ANALYSIS

6.1 ANALYTICAL RESULTS

The laboratory analytical results are presented as Appendices A and B of this report. The laboratory analytical data presented as Appendix A have been evaluated in accordance with the procedures in SW-846, Chapter 9. The quality assurance and quality control results are also submitted in Appendix A and Appendix B.

6.2 STATISTICAL RESULTS

The statistical results for metals are presented in Table 2. Laboratory results below the detection limit are presented in Table 2 as the laboratory detection limit.

Table 3 presents a comparison of the Regulatory Threshold for each metal analyte and the relevant SW-846 statistical value for determining whether a waste material exhibits a toxic characteristic.

6.3 DIOXIN AND FURAN ANALYSIS

The results of the single composite combined ash sample for dioxins and furans are attached as Appendix B. The total 2,3,7,8-TCDD Equivalence was 77 ng/Kg or ppt. The total tetrachlorinated dibenzo-dioxins (TCDD) and furans (TCDF) are expressed in units of parts per trillion (ppt). The wet results represent 17.6% moisture content as determined by the 10.2-gram sample analyzed by Pace Analytical Services, LLC. The

pertinent information from this laboratory report is as follows:

Analyses Reference	Anal vte	Dry Results (ppt)	Wet Results (ppt)
DB-5/ DB-225	Total TCDD	200	165
DB-5/ DB-225	Total TCDF	1500	1236

6.4 TOTAL METALS AND HEXAVALENT CHROMIUM

Total and TCLP metals (arsenic, barium, cadmium, chromium, lead, selenium and silver) were analyzed for each of the ten samples using the analytical procedure 6020B. Total mercury was analyzed using procedure 7470A and TCLP mercury was analyzed using procedure 7470A. The procedure used for hexavalent chromium was 3060A.

7.0 CONCLUSION

All analytical data was evaluated in complete compliance with the procedures set forth and required by SW-846. The composite analytical evaluation and the statistical evaluation have determined that the ash does not exhibit a hazardous characteristic and that it should be managed as a non-hazardous solid waste.

8.0 REFERENCES

- (1) Environmental Protection Agency,
 "Sampling and Analysis of Municipal Refuse Incinerator Ash," (Draft Guidance Document) May 1994.
- (2) Environmental Protection Agency, "Manual SW-846 - Test Methods for Evaluating Solid Waste -Physical/Chemical Methods," March 1992.
- (3) Environmental Protection Agency,
 "Guidance for the Sampling and Analysis of Municipal Waste Combustion Ash
 for the Toxicity Characteristic," June 1995.

Table 1 FIELD ASH SAMPLE SCHEDULE AND BULK CHARACTERISTICS

			Composite Subsample Bulk Characteristics (Kilograms)						
Sample	<u>Date</u>	Greater than 3/8 Inches and Non-Crushable Metals	Less than 3/8 Inches	<u>Total</u>	Moisture (As Wt. %)				
36460-1	4/14/2021	0.00	0.10	0.10	17.1				
36460-2	4/14/2021	0.00	0.09	0.09	16.7				
36460-3	4/15/2021	0.00	0.10	0.10	22.4				
36460-4	4/16/2021	0.00	0.10	0.10	21.7				
36460-5	4/16/2021	0.00	0.10	0.10	22.4				
36460-6	4/16/2021	0.00	0.10	0.10	24.2				
36460-7	4/17/2021	0.00	0.10	0.10	15.8				
36460-8	4/18/2021	0.00	0.10	0.10	21.9				
36460-9	4/19/2021	0.00	0.10	0.10	17.5				
36460-10	4/19/2021	0.00	0.10	0.10	18.2				

TABLE 2.0 LABORATORY RESULTS FOR THE COVANTA HONOLULU INC.-UNIT 3 FACILITY

2.1 SAMPLE SPECIFIC RESULTS

		Concentration Levels (mg/l)									
Sample Number	Date of Composite	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Lead (Pb)	Mercury (H g)	Selenium (Se)	Silver (Ag)		
36737-1	4/14/2021	0.05	0.702	0.05	0.05	0.05	0.0004	0.05	0.0		
36737-2	4/14/2021	0.05	0.794	0.05	0.05	0.05	0.0004	0.05	0.0		
36737-3	4/15/2021	0.05	0.767	0.05	0.05	0.05	0.0004	0.05	0.0		
36737-4	4/16/2021	0.05	0.837	0.05	0.05	0.05	0.0004	0.072	0.0		
36737-5	4/16/2021	0.05	0.662	0.057	0.05	0.05	0.0004	0.05	0.0		
36737-6	4/16/2021	0.05	1.780	0.05	0.05	0.05	0.0004	0.05	0.05		
36737-7	4/17/2021	0.05	0.710	0.05	0.05	0.05	0.0004	0.05	0.05		
36737-8	4/18/2021	0.05	0.791	0.115	0.05	0.05	0.0004	0.05	0.05		
36737-9	4/19/2021	0.05	0.746	0.05	0.05	0.05	0.0004	0.05	0.05		
36737-10	4/19/2021	0.05	0.851	0.05	0.05	0.05	0.0004	0.05	0.05		
Sum of the Concentrations		0.50	8.64	0.57	0.50	0.50	0.004	0.52	0.50		
Concentrations		0.50	8.64	0.57	0.50	0.50	0.004	0.52	0.50		
(Sum of the Concentrations)		0.25	74.65	0.33	0.25	0.25	0.000016	0.27	0.25		
Sum of the Squares of the Concentrations	GARAGO CO SERVERO ()	0.03	8.43	0.04	0.03	0.03	0.0000016	0.03	0.03		
Student "T" Constant (two tailed confidence interval @ 80%, t.20)		1.38	1.38	1.38	1.38	1.38	1.38	1.38	1,38		
Mean, x		0.05	0.864	0.06	0.00	0.05	0.0004	0.05	0.05		
		0.00	0.107	0.000	0.00	0.00	0.00	0.0000	0.00		
Variance, s ² Standard Deviation, s		0.00	0.327	0.02	0.00	0.00	0.00	0.01	0.00		
		0.00	0.104	0.006	0.00	0.00	0.00	0.002	0.00		
Standard Error, S _x		0.00	0.104	0.000	0.00	0.00	Ų. 30	5.002	0.00		
Upper Confidence Interval (normal)		0.05	1.007	0.07	0.05	0.05	0.0004	0.06	0.05		

Table 3

COMPARISON OF SW-846 STATISTICAL RESULTS AND REGULATORY THRESHOLDS FOR METAL ANALYTES

Analyte	90% Upper Confidence Interval per SW-846 (b)	Regulatory Threshold (a)
Metals		
Arsenic	0.05	5.0
Barium	1.007	100.0
Cadmium	0.07	1.0
Chromium	0.05	5.0
Lead	0.05	5.0
Mercury	0.0004	0.2
Selenium	0.06	1.0
Silver	0.05	5.0
OllACI	V.VV	

- (a) 40 CFR Part 261. All units are expressed as milligrams per liter (mg/L).
- (b) 90% Upper Confidence Interval as a single-tailed distribution is equivalent to an 80% Upper Confidence Interval as a two-tailed distribution.

APPENDIX A Element One Inc. Laboratory and QA/QC Results



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SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 June 2, 2021 Client Project Name 2Q21 Unit 3 Ash Sampling Client Project Number

Sample ID: HON/CA/04-14-21/02:30/U3/1a

Sample Matrix Date Combined Sampler	Combine 04/14/20		Sample Time Sa Delivere	ampled	Truck 0230 UPS		Date Received Time Received Received by	05/21/2021 0955 LLB
Extraction Begun	05/23/21	1500	Extraction	on Ended	05/24/21	0840	E1 Sample #	36737-1
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dig	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Arsenic, TCLP digest		< 0.05		0.05	50	0.001	EPA 1311/60	20B 05/25/21
Selenium, TCLP dige		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Silver, TCLP digested		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Cadmium, TCLP dige		< 0.05	-	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Barium, TCLP digest		0.702	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Lead, TCLP digested		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Mercury, TCLP diges		< 0.0004	-	0.0004	2	0.0002	PA 1311/74	70A 05/25/21
Solids		82.9	_				SM2540G	05/23/21
pH, Initial		12.76	SU				EPA 1311	05/23/21
Fluid Determination p	Н	11.67	SU				EPA 1311	05/23/21
TCLP pH, Final		10.18	SU				EPA 1311	05/24/21
pH, Extraction Fluid #	12	2.86	SU				EPA 1311	05/23/21

Ken Smith, Laboratory Director

Page 1 of 20



Combined Ash

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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

Sample Matrix

June 2, 2021 Client Project Name 2Q21 Unit 3 Ash Sampling Client Project Number

Date Received

05/21/2021

Sample ID: HON/CA/04-14-21/02:30/U3/1a

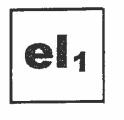
Truck

Sample Type

Date Combined 04/14/2021 Sampler			Time Sampled Delivered by		0230 UPS		Received ived by ample #	0955 LLB 36737		
Parameter		Result	Result	Unit	Dilution	DL	Meth	od	Date	
		As Received	Dry Basis							
Chromium, Total		1097	1323	mg/kg	500	0.1	EPA 3051	1/6020B	06/01/21	
Arsenic, Total		78.1	94.2	mg/kg	25	0.1	EPA 3051	1/6020B	06/01/21	
Selenium, Total		5.99	7.23	mg/kg	25	0.1	EPA 3051	I/6020B	06/01/21	
Silver, Total		13.5	16.3	mg/kg	25	0.1	EPA 3051	1/6020B	06/01/21	
Cadmium, Total		73.6	88.8	mg/kg	25	0.1	EPA 3051	/6020B	06/01/21	
Barlum, Total		364	439	mg/kg	25	0.1	EPA 3051	/6020B	06/01/21	
Lead, Total		1455	1755	mg/kg	500	0.1	EPA 3051	/6020B	06/01/21	
Mercury, Total		0.991	1.20	mg/kg	2	0.2	EPA 3051	/7470A	06/01/21	
Hexavalent Chromiu	m, Total	1.75	2.11	mg/kg	10	0.010	EPA 30	060A	06/01/21	
Total Volatile Residu	е	6.35		%			SM254	OG/E	05/25/21	
pH, as received		11.99		SŲ			EPA 90	045D	05/25/21	
Solids		82.9		%			SM25	40G	05/23/21	
Moisture		17.1		%			SM25	40G	05/23/21	

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Page 2 of 20



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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 June 2, 2021 Client Project Name 2Q21 Unit 3 Ash Sampling Client Project Number

Sample ID: HON/CA/04-14-21/22:00/U3/2b

Sample Matrix Date Combined Sampler	Combin 04/14/2	ed Ash 021	Sample Time Sa Delivere	mpled	Truck 2200 UPS		Date Received Time Received Received by	05/2 0955 LLB	1/2021 5 :
Extraction Begun	05/23/2	1 1500	Extraction	on Ended	05/24/21	0840	E1 Sample #	3673	37-2
Parameter		Result	Unit	Calc. RL	Dilution	ÐL	Method		Date
Chromium, TCLP dig	nested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B	05/25/21
Arsenic, TCLP diges	-	< 0.05		0.05	50	0.001	EPA 1311/60	20B	05/25/21
Selenium, TCLP dige		< 0.05	·	0.05	50	0.001	EPA 1311/60	20B	05/25/21
Silver, TCLP digeste		< 0.05		0.05	50	0.001	EPA 1311/60	20B	05/25/21
Cadmium, TCLP dig		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B	05/25/21
Barium, TCLP digest		0.794		0.05	50	0.001	EPA 1311/60	20B	05/25/21
Lead, TCLP digested		< 0.05		0.05	50	0.001	EPA 1311/60	20B	05/25/21
Mercury, TCLP diges		< 0.0004	_	0.0004	2	0.0002	EPA 1311/74	70A	05/25/21
Solids		83.3	_				SM2540G	•	05/23/21
pH, Initial		12.77	SU				EPA 1311		05/23/21
Fluid Determination	рΗ	11.06					EPA 1311		05/23/21
TCLP pH, Final	r	9.59					EPA 1311		05/24/21
pH, Extraction Fluid	#2	2.86		•			EPA 1311		05/23/21
for all mention and deposits a section of									

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Page 3 of 20



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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 June 2, 2021 Client Project Name 2Q21 Unit 3 Ash Sampling Client Project Number

Sample ID: HON/CA/04-14-21/22:00/U3/2b

Sample Matrix Date Combined Sampler	Combined A 04/14/2021	Time	ple Type Sampled rered by	Truck 2200 UPS		Date Received by E1 Sample	ved y	05/21/20 0955 LLB 36737-2	
		10	D	l facts	Dilation	D)	B 4 = 4 lb =	al.	Data

Parameter	Result	Result	Unit	Dilution	DL	Method	Date
	As Received	Dry Basis					
Chromium, Total	79.6	95.6	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Arsenic, Total	95.8	115	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Selenium, Total	12.6	15.1	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Silver, Total	15.7	18.8	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Cadmium, Total	91.3	110	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Barium, Total	400	480	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Lead, Total	1714	2058	mg/kg	500	0.1	EPA 3051/6020B	06/01/21
Mercury, Total	1.38	1.66	mg/kg	2	0.2	EPA 3051/7470A	06/01/21
Hexavalent Chromium, Total	1.33	1.60	mg/kg	10	0.010	EPA 3060A	06/01/21
Total Volatile Residue	7.01		%			SM2540G/E	05/25/21
pH, as received	12.05		SU			EPA 9045D	05/25/21
Solids	83.3		%			SM2540G	05/23/21
Moisture	16.7		%			SM2540G	05/23/21

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Page 4 of 20



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SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36737

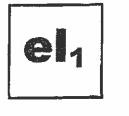
Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 June 2, 2021 Client Project Name 2Q21 Unit 3 Ash Sampling Client Project Number

Sample ID: HON/CA/04-15-21/23:48/U3/3c

Sample Matrix Comb Date Combined 04/15/ Sampler		Sample Time Sa Delivere	mpled	Truck 2348 UPS		Date Received Time Received Received by	05/2 0955 LLB	1/2021
Extraction Begun 05/23/	21 1500	Extraction	on Ended	05/24/21	0840	E1 Sample #	3673	37-3
Parameter	Result	Unit	Calc. RL	Dilution	DL	Method		Date
Chromium, TCLP digested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B	05/25/21
Arsenic, TCLP digested	< 0.05	_	0.05	50	0.001	EPA 1311/60	20B	05/25/21
Selenium, TCLP digested	< 0.05		0.05	50	0.001	EPA 1311/60	20B	05/25/21
Silver, TCLP digested	< 0.05	-	0.05	50	0.001	EPA 1311/60	20B	05/25/21
Cadmium, TCLP digested	< 0.05	_	0.05	50	0.001	EPA 1311/60	20B	05/25/21
Barium, TCLP digested	0.767	mg/L	0.05	50	0.001	EPA 1311/60	20B	05/25/21
Lead, TCLP digested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B	05/25/21
Mercury, TCLP digested	< 0.0004	mg/L	0.0004	2	0.0002		-	05/25/21
Solids	77.6	_				SM2540G	3	05/23/21
pH, Initial	12.76	SU				EPA 1311		05/23/21
Fluid Determination pH	10.86					EPA 1311		05/23/21
TCLP pH, Final	9.42					EPA 1311		05/24/21
pH, Extraction Fluid #2	2.86					EPA 1311		05/23/21

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Page 5 of 20



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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, Hl 96707 June 2, 2021

Client Project Name 2Q21 Unit 3 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-15-21/23:48/U3/3c

Parameter	Result	Result	Unit	Dilution	DL	Method	Date
,	As Received	Dry Basis					
Chromium, Total	91.0	117	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Arsenic, Total	137	177	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Selenium, Total	18.6	24.0	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Silver, Total	10.6	13.7	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Cadmium, Total	83.1	107	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Barium, Total	417	537	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Lead, Total	2183	2813	mg/kg	500	0.1	EPA 3051/6020B	06/01/21
Mercury, Total	1.47	1.89	mg/kg	2	0.2	EPA 3051/7470A	06/01/21
Hexavalent Chromium, Total	0.433	0.558	mg/kg	10	0.010	EPA 3060A	06/01/21
Total Volatile Residue	4.41		%			SM2540G/E	05/25/21
pH, as received	12.01		SU			EPA 9045D	05/25/21
Solids	77.6		%			SM2540G	05/23/21
Moisture	22.4		%			SM2540G	05/23/21

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Page 6 of 20



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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolel, HI 96707 June 2, 2021 Client Project Name 2Q21 Unit 3 Ash Sampling Client Project Number

Sample ID: HON/CA/04-16-21/06:00/U3/4a

Sample Matrix Date Combined Sampler	Combine 04/16/20	21	Sample Time Sa Delivere	ampled	Truck 0600 UPS		Date Received Time Received Received by	05/21/2021 0955 LLB
Extraction Begun	05/23/21	1500	Extraction	on Ended	05/24/21	0840	E1 Sample #	36737-4
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dige	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Arsenic, TCLP digest		< 0.05	•	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Selenium, TCLP dige		0.072	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Silver, TCLP digested		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Cadmium, TCLP dige		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Barium, TCLP digeste		0.837	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Lead, TCLP digested		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Mercury, TCLP digest		0.0004	mg/L	0.0004	2	0.0002	EPA 1311/74	70A 05/25/21
Solids		78.3					SM2540G	05/23/21
pH, Initial		12.96	SU				EPA 1311	05/23/21
Fluid Determination p	Н	11.22	SU				EPA 1311	05/23/21
TCLP pH, Final		9.83	SU				EPA 1311	05/24/21
pH, Extraction Fluid #	2	2.86	SU				EPA 1311	05/23/21

Ken Smith, Laboratory Director

Page 7 of 20



Combined Ash

Element One Inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

Sample Matrix

June 2, 2021 Client Project Name 2Q21 Unit 3 Ash Sampling Client Project Number

Date Received

05/21/2021

Sample ID: HON/CA/04-16-21/06:00/U3/4a

Truck

Sample Type

Date Combined 04 Sampler	4/16/2021	Time Sampled Delivered by		d 0600 UPS		Rece	ived by LL	0955 LLB 36737-4 TOT	
Parameter	Res	sult	Result	Unit	Dilution	DL	Method	Date	
	As Red	ceived	Dry Basis						
Chromium, Total	57	.9	73.9	mg/kg	25	0.1	EPA 3051/602	OB 06/01/21	
Arsenic, Total	99	.1	127	mg/kg	25	0.1	EPA 3051/602	OB 06/01/21	
Selenium, Total	3.9	99	5.10	mg/kg	25	0.1	EPA 3051/602	OB 06/01/21	
Silver, Total	6.4	10	8.17	mg/kg	25	0.1	EPA 3051/602	OB 06/01/21	
Cadmium, Total	58	.4	74.6	mg/kg	25	0.1	EPA 3051/602	OB 06/01/21	
Barium, Total	42	27	545	mg/kg	25	0.1	EPA 3051/602	OB 06/01/21	
Lead, Total	203	39	2604	mg/kg	500	0.1	EPA 3051/602	OB 06/01/21	
Mercury, Total	1.0)4	1.33	mg/kg	2	0.2	EPA 3051/747	OA 06/01/21	
Hexavalent Chromium	Total 1.1	19	1.52	mg/kg	10	0.010	EPA 3060A	06/01/21	
Total Volatile Residue	5.2	20		%			SM2540G/E	05/25/21	
pH, as received	12.	14		SU			EPA 9045D	05/25/21	
Solids	78	.3		%			SM2540G	05/23/21	
Moisture	21	.7		%			SM2540G	05/23/21	

Ken Smith, Laboratory Director

Page 8 of 20



Element One Inc. 6319-D Carolina Beach Rd. Wilmington, HC 28412

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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 June 2, 2021 Client Project Name 2Q21 Unit 3 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-16-21/08:30/U3/5b

Sample Matrix Date Combined Sampler	Combine 04/16/20	21	Sample Time Sa Delivere	mpled	Truck 0830 UPS		Date Received Time Received Received by	05/21/2021 0955 LLB
Extraction Begun	05/23/21	1500	Extraction	on Ended	05/24/21	0840	E1 Sample #	36737-5
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dig	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Arsenic, TCLP digest		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Selenium, TCLP dige		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Silver, TCLP digested		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Cadmium, TCLP dige		0.057	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Barium, TCLP digeste		0.662	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Lead, TCLP digested		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60:	20B 05/25/21
Mercury, TCLP diges		0.0004	mg/L	0.0004	2	0.0002	EPA 1311/74	70A 05/25/21
Solids		77.6	%				SM2540G	05/23/21
pH, Initial		12.80	SU				EPA 1311	05/23/21
Fluid Determination p	Н	10.80	SU				EPA 1311	05/23/21
TCLP pH, Final		8.74	SU				EPA 1311	05/24/21
pH. Extraction Fluid #	2	2.86	SU				EPA 1311	05/23/21

Ken Smith, Laboratory Director

Page 9 of 20



Combined Ash

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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

Sample Matrix

June 2, 2021

Client Project Name 2Q21 Unit 3 Ash Sampling

Date Received

05/21/2021

Client Project Number

Sample ID: HON/CA/04-16-21/08:30/U3/5b

Truck

Sample Type

Date Combined 0 Sampler	4/16/202	21 Time Sampled Delivered by		d 0830 UPS			ived by	0955 LLB 36737-5 TOT	
Parameter		Result	Result	Unit	Dilution	DL	Method	1	Date
		As Received	Dry Basis						
Chromium, Total		92.5	119	mg/kg	25	0.1	EPA 3051/6	020B	06/01/21
Arsenic, Total		101	130	mg/kg	25	0.1	EPA 3051/6		06/01/21
Selenium, Total		12.7	16.4	mg/kg	25	0.1	EPA 3051/6	020B	06/01/21
Silver, Total		12.3	15.9	mg/kg	25	0.1	EPA 3051/6	020B	06/01/21
Cadmium, Total		77.9	100	mg/kg	25	0.1	EPA 3051/6	020B	06/01/21
Barium, Total		462	595	mg/kg	25	0.1	EPA 3051/6	020B	06/01/21
Lead, Total		1514	1951	mg/kg	500	0.1	EPA 3051/6	020B	06/01/21
Mercury, Total		2.96	3.81	mg/kg	2	0.2	EPA 3051/7	470A	06/01/21
Hexavalent Chromium	-	1.43	1.84	mg/kg	10	0.010	EPA 3060)A	06/01/21
Total Volatile Residue		7.21		%			SM2540G	i/E	05/25/21
pH, as received		11.98		SU			EPA 9045	5D	05/25/21
Solids		77.6		%			SM25400	G	05/23/21
Moisture		22.4		%			SM25400	G	05/23/21

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Page 10 of 20



Element One Inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, Hi 96707 June 2, 2021

Client Project Name 2Q21 Unit 3 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-16-21/14:30/U3/6c

Sample Matrix Date Combined Sampler	Combine 04/16/202		Sample Time Sa Delivere	mpled	Truck 1430 UPS		Date Received Time Received Received by	05/21/2021 0955 LLB
Extraction Begun	05/23/21	1500	Extraction	on Ended	05/24/21	0840	E1 Sample #	36737-6
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dig	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Arsenic, TCLP digest		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Selenium, TCLP dige		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Silver, TCLP digested		< 0.05		0.05	50	0.001	EPA 1311/60	20B 05/25/21
Cadmium, TCLP dige		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Barium, TCLP digest		1.78	-	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Lead, TCLP digested		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Mercury, TCLP diges		0.0004	_	0.0004	2	0.0002	PA 1311/74	70A 05/25/21
Solids		75.8	%				SM2540G	05/23/21
pH, Initial		12.90	SU				EPA 1311	05/23/21
Fluid Determination p	Н	11.76	SU				EPA 1311	05/23/21
TCLP pH, Final		9.81	SU				EPA 1311	05/24/21
pH, Extraction Fluid #	2	2.86	SU				EPA 1311	05/23/21

Ken Smith, Laboratory Director

Page 11 of 20



Element One Inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

Solids

Moisture

June 2, 2021

Client Project Name 2Q21 Unit 3 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-16-21/14:30/U3/6c

	Combine 04/16/202		Time	ple Type Sampled ered by	Truck 1430 UPS		Time Rece	Received Received ived by ample #	05/21/ 0955 LLB 36737	2021 -6 T OT			
Parameter		Result		Result		Result	Unit	Dilution	ÐL	Meth	od	Date	
		As Rec	eived	Dry Basis									
Chromium, Total		153	3	202	mg/kg	25	0.1	EPA 3051	/6020B	06/01/21			
Arsenic, Total		67.6		89.2	mg/kg	25	0.1	EPA 3051	/6020B	06/01/21			
Selenium, Total		8.6	כ	11.3	mg/kg	25	0.1	EPA 3051	/6020B	06/01/21			
Silver, Total		52.4	4	69.1	mg/kg	25	0.1	EPA 3051	/6020B	06/01/21			
Cadmium, Total		54.	9	72.4	mg/kg	25	0.1	EPA 3051.	/6020B	06/01/21			
Barium, Total		403	3	532	mg/kg	25	0.1	EPA 3051.	/6020B	06/01/21			
Lead, Total		110	5	1458	mg/kg	500	0.1	EPA 3051.	/6020B	06/01/21			
Mercury, Total		1.99	9	2.63	mg/kg	2	0.2	EPA 3051.	/7470A	06/01/21			
Hexavalent Chromiu	m, Total	0.45	4	0.599	mg/kg	10	0.010	EPA 30	60A	06/01/21			
Total Volatile Residu	e	3.70)		%			SM2540	G/E	05/25/21			
pH, as received		11.9	6		SU			EPA 90	45D	05/25/21			

%

Ken Smith, Laboratory Director

75.8

24.2

05/23/21

05/23/21

SM2540G

SM2540G



Element One Inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

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SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 June 2, 2021

Client Project Name 2Q21 Unit 3 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-17-21/22:07/U3/7a

Sample Matrix Date Combined Sampler	Combine 04/17/20		Sample Time Sa Delivere	ampled	Truck 2207 UPS		Date Received Time Received Received by	05/21/2021 0955 LLB	
Extraction Begun	05/23/21	1500	Extraction	on Ended	05/24/21	0840	E1 Sample #	36737-7	
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method	Date	
Chromium, TCLP dig	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21	
Arsenic, TCLP digest		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21	
Selenium, TCLP dige		< 0.05	-	0.05	50	0.001	EPA 1311/60	20B 05/25/21	
Silver, TCLP digested		< 0.05	_	0.05	50	0.001	EPA 1311/60	20B 05/25/21	
Cadmium, TCLP dige		< 0.05		0.05	50	0.001	EPA 1311/60	20B 05/25/21	
Barium, TCLP digeste		0.710	-	0.05	50	0.001	EPA 1311/60	20B 05/25/21	
Lead, TCLP digested		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21	
Mercury, TCLP diges		< 0.0004	mg/L	0.0004	2	0.0002	EPA 1311/74	70A 05/25/21	
Solids		84.2	%				SM2540G	05/23/21	
pH, Initial		12.80	SU				EPA 1311	05/23/21	
Fluid Determination p	Н	10.10	SU				EPA 1311	05/23/21	
TCLP pH, Final		8.98	SU				EPA 1311	05/24/21	
pH. Extraction Fluid #	2	2.86	SU				EPA 1311	05/23/21	

Ken Smith, Laboratory Director

Page 13 of 20



elementOne

Combined Ash

Element One Inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, Hi 96707

Sample Matrix

June 2, 2021

Client Project Name 2Q21 Unit 3 Ash Sampling

Date Received

05/21/2021

Client Project Number

Sample ID: HON/CA/04-17-21/22:07/U3/7a

Truck

Sample Type

	04/17/20		Time	Sampled vered by	2207 UPS		Time Rece	Received ived by ample #	0955 LLB 36737	- 7 TOT
Parameter		Resu	ılt	Result	Unit	Dilution	ÐL	Meth	od	Date
		As Rece	ived	Dry Basis						
Chromium, Total		111		132	mg/kg	25	0.1	EPA 3051.	/6020B	06/01/21
Arsenic, Total		75.5	5	89.7	mg/kg	25	0.1	EPA 3051.	/6020B	06/01/21
Selenium, Total		11.4	}	13.5	mg/kg	25	0.1	EPA 3051	/6020B	06/01/21
Silver, Total		6.39	}	7.59	mg/kg	25	0.1	EPA 3051	/6020B	06/01/21
Cadmium, Total		61.0)	72.4	mg/kg	25	0.1	EPA 3051	/6020B	06/01/21
Barium, Total		365		433	mg/kg	25	0.1	EPA 3051	/6020B	06/01/21
Lead, Total		1266		1504	mg/kg	500	0.1	EPA 3051	/6020B	06/01/21
Mercury, Total		1.40)	1.66	mg/kg	2	0.2	EPA 3051	/7470A	06/01/21
Hexavalent Chromiun	-	< 0.19	2	< 0.228	mg/kg	10	0.010	EPA 30	60A	06/01/21
Total Volatile Residue	€	7.18			%			SM2540)G/E	05/25/21
pH, as received		12.03	3		SU			EPA 90	45D	05/25/21
Solids		84.2			%			SM254	_	05/23/21
Moisture		15.8			%			SM254	-0G	05/23/21

Ken Smith, Laboratory Director

Page 14 of 20



elementOne

Element One Inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

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SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 June 2, 2021 Client Project Name 2Q21 Unit 3 Ash Sampling Client Project Number

Sample ID: HON/CA/04-18-21/13:15/U3/8b

Sample Matrix Date Combined Sampler	Combine 04/18/20.		Sample Time Sa Delivere	ampled	Truck 1315 UPS		Date Received Time Received Received by	05/21/2021 0955 LLB
Extraction Begun	05/23/21	1500	Extraction	on Ended	05/24/21	0840	E1 Sample #	36737-8
Parameter		Result	Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dige	ested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Arsenic, TCLP digeste		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Selenium, TCLP diges	sted	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Silver, TCLP digested		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Cadmium, TCLP diges	sted	0.115	mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Barium, TCLP digeste	ed	0.791	mg/L	0.05	50	0.001	EPA 1311/60:	20B 05/25/21
Lead, TCLP digested		< 0.05	mg/L	0.05	50	0.001	EPA 1311/60:	20B 05/25/21
Mercury, TCLP digest	ed <	0.0004	mg/L	0.0004	2	0.0002	PPA 1311/74	70A 05/25/21
Solids		78.1	%				SM2540G	05/23/21
pH, Initial		12.97	SU				EPA 1311	05/23/21
Fluid Determination pl	-1	11.17	SU				EPA 1311	05/23/21
TCLP pH, Final		8.36	SU				EPA 1311	05/24/21
pH, Extraction Fluid #	2	2.86	SU				EPA 1311	05/23/21

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SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, Hi 96707

June 2, 2021

Client Project Name 2Q21 Unit 3 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-18-21/13:15/U3/8b

•	mbined Ash 118/2021	Time	ple Type Sampled ered by	Truck 1315 UPS		Time Rece	Received Received ived by ample #	05/21/ 0955 LLB 36737	2021 -8 TOT
Parameter	Res	ult	Result	Unit	Dilution	DL	Metho	od	Date
	As Red	eived	Dry Basis						
Chromium, Total	72.	6	93.0	mg/kg	25	0.1	EPA 3051	6020B	06/01/21
Arsenic, Total	38.	6	49.4	mg/kg	25	0.1	EPA 3051/	6020B	06/01/21
Selenium, Total	5.2	8	6.76	mg/kg	25	0.1	EPA 3051/	6020B	06/01/21
Silver, Total	< 2.	48	< 3.18	mg/kg	25	0.1	EPA 3051/	6020B	06/01/21
Cadmium, Total	37.	0	47.4	mg/kg	25	0.1	EPA 3051/	6020B	06/01/21
Barium, Total	30:	5	391	mg/kg	25	0.1	EPA 3051/	6020B	06/01/21
Lead, Total	121	6	1557	mg/kg	500	0.1	EPA 3051/	6020B	06/01/21
Mercury, Total	0.82	28	1.06	mg/kg	2	0.2	EPA 3051/	7470A	06/01/21
Hexavalent Chromium,	Total < 0.1	94	< 0.248	mg/kg	10	0.010	EPA 30	50A	06/01/21
Total Volatile Residue	4.8	7		%			SM2540	G/E	05/25/21
pH, as received	12.0	6		SU			EPA 904	45D	05/25/21
Solids	78.	1		%			SM254	0G	05/23/21
Moisture	21.	9		%			SM254	0G	05/23/21

Ken Smith, Laboratory Director

Page 16 of 20



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elementOne

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 June 2, 2021 Client Project Name 2Q21 Unit 3 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-19-21/08:30/U3/9c

Sample Matrix Date Combined Sampler	Combined As: 04/19/2021	Time :	le Type Sampled red by	Truck 0830 UPS		Date Received Time Received Received by	05/21/2021 0955 LLB
Extraction Begun	05/23/21 1500	Extrac	tion Ended	05/24/21	0840	E1 Sample #	36737-9
Parameter	Res	sult Unit	Calc. RL	Dilution	DL	Method	Date
Chromium, TCLP dige	ested < 0	.05 mg/l	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Arsenic, TCLP digest	ed < 0	.05 mg/l	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Selenium, TCLP dige	sted < 0	05 mg/l	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Silver, TCLP digested	< 0	.05 mg/l	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Cadmium, TCLP dige	sted < 0	05 mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Barium, TCLP digeste	ed 0.7	'46 mg/L	_ 0.05	50	0.001	EPA 1311/60	20B 05/25/21
Lead, TCLP digested	< 0.	05 mg/L	0.05	50	0.001	EPA 1311/60	20B 05/25/21
Mercury, TCLP digest	ted < 0.00	04 mg/L	0.0004	2	0.0002	2 EPA 1311/74	70A 05/25/21
Solids	82	2.5 %				SM2540G	05/23/21
pH, Initial	12.	87 SU				EPA 1311	05/23/21
Fluid Determination pl	H 11,	96 SU				EPA 1311	05/23/21
TCLP pH, Final	10.	05 SU				EPA 1311	05/24/21
pH, Extraction Fluid #	2 2.	86 SU				EPA 1311	05/23/21



Phone: 910 793-0128 Fax: 910 792-6853 e1lab@e1lab.com

SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707 June 2, 2021

Client Project Name 2Q21 Unit 3 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-19-21/08:30/U3/9c

Sample Matrix Date Combined Sampler	Combined Ash 04/19/2021	Sample Time Sa Delivere	mpled	Truck 0830 UPS		Date Recorded Received E1 Sample	eived by	05/21/20 0955 LLB 36737-9	
Parameter	Re	esult l	Result	Unit	Dilution	DL	Metho	od	Date

Parameter	Result	Result	Unit	Dilution	DL	Method	Date
	As Received	Dry Basis					
Chromium, Total	71.7	86.9	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Arsenic, Total	50.3	61.0	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Selenium, Total	5.9 1	7.16	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Silver, Total	3.36	4.07	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Cadmlum, Total	50.7	61.5	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Barium, Total	322	390	mg/kg	25	0.1	EPA 3051/6020B	06/01/21
Lead, Total	954	1156	mg/kg	500	0.1	EPA 3051/6020B	06/01/21
Mercury, Total	1.52	1.84	mg/kg	2	0.2	EPA 3051/7470A	06/01/21
Hexavalent Chromium, Total	0.640	0.776	mg/kg	10	0.010	EPA 3060A	06/01/21
Total Volatile Residue	4.19		%			SM2540G/E	05/25/21
pH, as received	12.20		SU			EPA 9045D	05/25/21
Solids	82.5		%			SM2540G	05/23/21
Moisture	17.5		%			SM2540G	05/23/21

Ken Smith, Laboratory Director

Page 18 of 20



Phone: 910 793-0128 Fax: 910 792-6853 e1lab@e1lab.com

SUMMARY OF TCLP ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

June 2, 2021

Client Project Name 2Q21 Unit 3 Ash Sampling

Client Project Number

Sample ID: HON/CA/04-19-21/13:15/U3/10a

• · · · · · · · · · · · · · · · · · · ·	embined Ash /19/2021	Sample Time Sa Delivere	ampled	Truck 1315 UPS		Date Received Time Received Received by	05/21/2021 0955 LLB
Extraction Begun 05	/23/21 1500	Extracti	on Ended	05/24/21	0840	E1 Sample #	36737-10
Parameter	Result	Unit	Caic. RL	Dilution	DL	Method	Date
Chromium, TCLP digeste	ed < 0.05	mg/L	0.05	50	0.001	EPA 1311/60:	
Arsenic, TCLP digested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/60	
Selenium, TCLP digested	d < 0.05	mg/L	0.05	50	0.001	EPA 1311/60	
Silver, TCLP digested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/602	
Cadmium, TCLP digested	d < 0.05	mg/L	0.05	50	0.001	EPA 1311/602	
Barium, TCLP digested	0.851	mg/L	0.05	50	0.001	EPA 1311/602	
Lead, TCLP digested	< 0.05	mg/L	0.05	50	0.001	EPA 1311/602	20B 05/25/21
Mercury, TCLP digested	< 0.0004	mg/L	0.0004	2	0.0002	EPA 1311/747	70A 05/25/21
Solids	81.8	%				SM2540G	05/23/21
pH, Initial	12.95	SU				EPA 1311	05/23/21
Fluid Determination pH	11.99	SU				EPA 1311	05/23/21
TCLP pH, Final	10.36	SU				EPA 1311	05/24/21
pH, Extraction Fluid #2	2.86	SU				EPA 1311	05/23/21

Ken Smith, Laboratory Director

Page 19 of 20



Combined Ash

Element One Inc. 6319-D Carolina Beach Rd. Wilmington, NC 28412

Phone: 910 793-0128 Fax: 910 792-6853 e1iab@e1iab.com

SUMMARY OF TOTAL ANALYSES Element One, Inc. Project Number e36737

Covanta Honolulu, Inc. 91-174 Hanua Street Kapolei, HI 96707

Sample Matrix

June 2, 2021

Client Project Name 2Q21 Unit 3 Ash Sampling

Date Received

05/21/2021

Client Project Number

Sample ID: HON/CA/04-19-21/13:15/U3/10a

Truck

Sample Type

Date Combined 04/ Sampler	19/2021		Sampled vered by	1315 UPS		Rece	Received 0955 ived by LLB		
						E1 S	ample#	36737	-10 TOT
Parameter	F	Result	Result	Unit	Dilution	DL	Method	l	Date
	As I	Received	Dry Basis						
Chromium, Total		68.8	84.1	mg/kg	25	0.1	EPA 3051/6	020B	06/01/21
Arsenic, Total		44.0	53.8	mg/kg	25	0.1	EPA 3051/6	020B	06/01/21
Selenium, Total		4.58	5.60	mg/kg	25	0.1	EPA 3051/60	020B	06/01/21
Silver, Total		119	145	mg/kg	25	0.1	EPA 3051/60	020B	06/01/21
Cadmium, Total		43.8	53.5	mg/kg	25	0.1	EPA 3051/60	020B	06/01/21
Barium, Total		775	947	mg/kg	500	0.1	EPA 3051/60	020B	06/01/21
Lead, Total	•	1081	1322	mg/kg	500	0.1	EPA 3051/60	020B	06/01/21
Mercury, Total		1.17	1.43	mg/kg	2	0.2	EPA 3051/74	470A	06/01/21
Hexavalent Chromium,	Total ().331	0.405	mg/kg	10	0.010	EPA 3060	A	06/01/21
Total Volatile Residue	,	7.41		%			SM2540G	/E	05/25/21
pH, as received	1	2.25		ŞU			EPA 9045	D	05/25/21
Solids	i	81.8		%			SM25400	3	05/23/21
Moisture		18.2		%			SM25400	3	05/23/21

Ken Smith, Laboratory Director

COVANTA

CHAIN OF CUSTODY - ASH

Designed for EMIS vs

Lab ID# 36737

<u> </u>	Facility	C	ovanta Honolulu H-P	ower '	PO	*		Re	cott to (Emai	N 1/-									<u> </u>		
	Address	91-17	4 Hanua Street, Kapole	HI 96707		Billing inform	nation, if different		AIT ID (CITICAL	7 30	sato@cova /	nta.com		⊢	+	Email	ID	_	<i>!</i>	7	icovne@covanta.com
	Contact Name	Kate	lyn Asato Ema	kasato	@covan		Phone		0050		1	<u></u>			+1	meli	ID				84 1 3
	Delivery Date		991	1 12	AT (circle one)	Normal	Rustr	808-426 1-Day	2 Day	3-Day		682-5203		Proj	ect ID			\Box	- 1	20	Q21 Unit 3 Ash Sampling
instr	uctions: Use leger	d shown bel	ow to Identify Purpose, S	ample Location	, Ash Type	and Sample 1	voe. For chan	gas to this form	contant th	Compareto	1-6-7		7	_	_			_			<u> </u>
	000	S	ample Location	Ash T	уре	11 (Sample		COMOUL (II)	e Corporate /	isn ream.		<u> </u>	,	analy	Bes	Reque	sted			Notes:
Chara	ctorize	Bell	FEL:FrontEnd Loader	Combined Ash:	CA	0 20 0	Composite		Other	ł											70
	ss Knowledge	Crane	Truck	Bottom Astr. BA		2-Hr: 2H	- 1,200	Quarter: QC	2	1								7199			Please pick 1 of the 3 provided aliquots to
R&D		Pile	Super Sac	Fly Ash: FA		4-Hr: 4H	Daily: DC	Truck: TR	1. 25									>1	اھ		first analyze for TCLP pH. Please contact John, Amanda or Katelyn with pH prior to
		Pugmill	Dust Master	Ratio Sample: F	RS	6-Hr: 6H		Day Shin: AM		1					6020			Cr 3060A	憲		completing other analyses.
	T ===	Belt/Pugmill			,	7-Hr: 7H	Month; MC				- 24		Fluid pH	Sig	9 SIS			5	Ē	삡	
Ref No.	[3-0	Sample ID o		Purpose	Sample Location	Ash Type	Sample Type	5 1 1		Sample Collection	Sample Collection	# Container	TCLP Flui	TCLP Metals	Total Metals	9045	7470A	Hexavalent	%-votatiles, moisture	Alkalinity /	
1	HON / CA / 04-1-	1-21 / 02:30	/U3/1a	Characterize	Pile	CA CA	TR	Sample #	Aliquot#	Start Date	Start Time	(6)	2	원	흔	됩	운	<u> </u>	ا غ	₩	Remarks
2	HON / CA / 04-1	-21 / 02:30 /	/U3 / 1b	Characterize	Pile	CA	TR =	1	1	4/14/2021	2:30 AM	1	Х	Х	х	х	X :	X :	х	X F	Please pick 1 of 3 aliquots to analyze
3	HON / CA / 04-14		1000	Characterize	Pile			1	2	4/14/2021	2:30 AM	1			11		2	30	T	\top	12 17 18
4	HON / CA / 04-1		1110.10-	Characterize	_	CA	TR	1	3	4/14/2021	2:30 AM	1				i		<u> </u>	T		
5	HON / CA / 04-1/		2.00	Characterize	Pile Pile	CA	TR	1	1	4/14/2021	10:00 PM	1	X	х	х	х	X	X >	х	X F	Please pick 1 of 3 aliquots to analyze
6	HON / CA / 04-14			Characterize	Pite	CA	TR	1	2	4/14/2021	10:00 PM	1		1 +		4		=	T	\top	6 7:
7	HGN / CA / 04-1			- 5		CA	TR	1	3	4/14/2021	10:00 PM	1			- 1		\top		1	्	
8	HON / CA / 04-1		1.00	Characterize	Pife	CA	TR	1	1	4/15/2021	11:48 PM	×1	x	×	х	х	x	x ,	X.	ХР	Please pick 1 of 3 aliquots to analyze
9	HON / CA / 04-1		4 (4)	Characterize	Pile	CA	TR	1	2	4/15/2021	11:48 PM	1		\neg	\neg	\top	ela.	+	+	+	
	HON / CA / 04-16		307 (60)	Characterize	Pile	CA	TR	1	3	4/15/2021	11:48 PM	1	\neg	1	+	+		1	+	+	
11	HON/ CA / 04-16		- 3	Characterize	Pile	CA .	TR	1	1	4/16/2021	6:00 AM	1	х	x	×	χŢ	x	x x	x	х Р	lease pick 1 of 3 aliquots to analyze
				Characterize	Pile	- CA	TR	1	2	4/16/2021	6:00 AM	1	寸	十	7	十		\pm	+	7	secon brew 1 of a sandmore to sitalia 58
	HON / CA / 04-16		i i	Characterize	Pile	CA	TR	1	3	4/16/2021	6:00 AM	1	+	\dashv	+	+	+	+	+	十	
13	HON / CA / 04-16			Charecterize	Plle	CA	TR	1	1	4/16/2021	8:30 AM	1	x	x	x	x	x i	九	()	1	10.00 to 10.00 to 10.00
14	HON / CA / D4-16		1.0	Characterize	Pile	CA	TR	1	2	4/16/2021	8:30 AM	1	Ĥ	-	7	+	^ ·	+	+	7	lease pick 1 of 3 aliquots to analyze
15	HON / CA / 04-16	-21 / 08:30 /	U3 / 5c }	Characterize	Pile	CA	TR	1	3	4/16/2021	8:30 AM	1	+	+	T I	+	+	十	+	+	
elina	uished by	Nome	20																		
	ed by lab	Name	1 /N				Date (5-18-2021	Time	02:30		Signal	ure				ij				
	Lab Notes	Name	VLISOV BY	abov_			Date (21-21	Time	0955		Signal	nte	X	Sha	1	1	1			
															-				─ ₩		10

COVARTA

CHAIN OF CUSTODY ~ ASH

hestened for FIAIS of

Lab ID# 36737

Fecllity Covanta Honolulu H-Power PO# Report to (Email) kasato@covanta.com + Email ID icovne@covanta.com Address 91-174 Hanua Street, Kapolei HI 96707 Billing information, if different + Email ID Contact Name Katelyn Asato kasato@covanta.com Phone 808-426-0852 Fax 808-682-5203 Project ID 2Q21 Unit 3 Ash Sampling Delivery Date TAT (circle one) Rush: 1-Day 2-Day 3-Day Instructions: Use legend shown below to identify Purpose, Sample Location, Ash Type and Sample Type. For changes to this form, contact the Corporate Ash Team. **Analyses Requested** Notes: Purpose Sample Location Ash Type Sample Type FEL:FrontEnd Loader Characterize Beit Combined Ash: CA Composite Other 7199 Process Knowledge Truck Bottom Ash: BA Please pick 1 of the 3 provided allounts to Crane 2-Hr. 2H 8-Hr. 8H Quarler: QC Grab: GR first analyze for TCLP pH. Please contact Hexavalent Cr 3060A / R&D Pile Super Sec Fly Ash: FA John, Amanda or Katelyn with pH prior to 4-Hr: 4H %-volatiles, moisture Daily: DC Truck: TR completing other enalyses. 6020 Pugmill Dust Master Relio Semole: RS 6-Hr: 6H Week WC Day Shift: AM TCLP Fluid pH Alkalinity / mEq Bell/Pugmill 7-Hr: 7H Month: MC NightShift: PM TCLP Metals **Fotal Metals** Hg 7470A pH 9045 Ref Sample Sample Sample ID on Label Sample Collection Collection # Containe No. (3-DigHFaciD/AshType/Date/Time) Purpose Location Ash Type Sample Type Sample # Aliquot # Start Date Start Time (8) Remarks 16 HON / CA / 04-16-21 / 14:30 / U3 / 6a Characterize Pile CA TR 1 4/16/2021 2:30 PM Х 1 Х Х Х Х Х Х Please pick 1 of 3 aliquots to analyze HON / CA / 04-16-21 / 14:30 / U3 / 6b Characterize Plle CA TR 1 2 4/16/2021 2:30 PM 1 HON / CA / 04-16-21 / 14:30 / U3 / 6c Characterize Pile CA TR 1 4/16/2021 3 2:30 PM 1 HON / CA / 04-17-21 / 22:07 / U3 / 7a Characterize Pile CA TR 1 4/17/2021 10:07 PM 1 X Х X. X X χ٠ X Please pick 1 of 3 aliquots to analyze HON / CA / 04-17-21 / 22:07 / U3 / 7b Characterize Plle CA TR 1 2 4/17/2021 10:07 PM 1 HON / CA / 04-17-21 / 22:07 / U3 / 7c / Charactertze Pile CA TR 1 3 4/17/2021 10:07 PM 1 HON / CA / 04-18-21 / 13:15 / U3 / 8a Characterize Pile CA TR 1 4/18/2021 1:15 PM 1 Х Х Х х Х X Х Please pick 1 of 3 aliquots to analyze HON / CA / 04-18-21 / 13:15 / U3 / 8b Characterize Pile CA TR 1 2 4/18/2021 1:15 PM 1 HON / CA / 04-18-21 / 13:15 / U3 / 8c Characterize Pile CA TR 1 3 4/18/2021 1:15 PM 1 HON / CA / 04-19-21 / 08:30 / U3 / 9a Characterize Pile CA TR 1 4/19/2021 8:30 AM 1 х X Х Х Х Please pick 1 of 3 affiguots to analyze HON / CA / 04-19-21 / 08:30 / U3 / 9b Characterize Pile CA TR 2 1 4/19/2021 8:30 AM 1 HON / CA / 04-19-21 / 08:30 / U3 / 9c Characterize Pile CA TR 1 4/19/2021 3 8:30 AM 1 HON / CA / 04-19-21 / 13:15 / U3 / 10a Characterize Pile CA TR 1 4/19/2021 1:15 PM 1 Х х X X X Please pick 1 of 3 aliquots to analyze Х Х HON / CA / 04-19-21 / 13:15 / U3 / 10b Characterize Pile CA **TR** 1 2 4/19/2021 1:15 PM 1 HON / CA / 04-19-21 / 13:15 / U3 / 10c Characterize Pile CA TR 1 3 4/19/2021 1:15 PM 1 Refinaulshed by Name Date Time Signature Received by lab Name. Date Time Signature Lab Notes

Appendix A

Sample Management

CHAIN-OF-CUSTODY Analytical Request Document LAB USE ONLY- Affix Work ace Analytical WO#: 10562480 Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent fields Company: Covanta Hpower Billing Information: **ALL SHAD** Address: 91-174 Hanua Street, Kapolei, HI 96707 Same Container Preservative Report To: Katelyn Asato Email To: kasato@covanta.com 0562480 * Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, Copy To: Site Collection Info/Address: 91-174 Hanua Street, Kapolei, HI (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (8) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other 96707 Customer Project Name/Number: Q2-2021 MBN Ash Sampling State: County/City: Time Zone Collected: Analyses Lab Profile/Line: []PT []MT []CT []ET Lab Sample Receipt Checklist: Phone: (808)-426-0852 Site/Facility ID #: Custody Seals Present/Intact Y N NA Compliance Monitoring? Email: kasato@covanta.com Custody Signatures Present Y N NA] Yes []No Collected By (print): Katelyn Asato Collector Signature Present Y N NA TEO Purchase Order # : DW PWS ID #: Bottles Intact Y N NA Quote #: DW Location Code: Correct Bottles Y N NA Collected By (signature): with Sufficient Volume Turnaround Date Required: N/A Immediately Packed on Ice: Y N NA Samples Received on Ice Y N NA) Yes [X]No VOA - Headspace Acceptable Y N NA Sample Disposal: 8290T-0 USDA Regulated Soils Field Filtered (if applicable): X] Dispose as appropriate [] Return Y N NA [] Same Day [] Next Day Samples in Holding Time [] Yes []No Y N NA Archive: Residual Chlorine Present Y N NA []2 Day []3 Day []4 Day [X]5 Day] Hold: Cl Strips: (Expedite Charges Apply) Analysis: Sample pH Acceptable Furans Y N NA ' Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), pH Strips: Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT) Sulfide Present Lead Acetate Strips: Comp / Collected (or Composite Res # of Customer Sample ID Composite End Dioxin LAB USE ONLY: Matrix * Grab Start) Ctns Lab Sample # / Comments: Date Time Date Time MBN Q2-2021 Ash Sample COMP 05-13-21 OT 2:00 1 X Customer Remarks / Special Conditions / Possible Hazards: Type of Ice Used: Wet Blue. Dry None SHORT HOLDS PRESENT (<72 hours): Y N N/A LAB Sample Temperature Info: Packing Material Used: Temp Blank Received: Y N Lab Tracking #: Therm ID#: 2 Cooler 1 Temp Upon Receipt: oC Radchem sample(s) screened (<500 cpm): Y N NA Samples received via: Cooler 1 Therm Corr. Factor: ___oC Cooler 1 Corrected Temp: 20.600 UPS Client Courier Pace Courier Relinguished by/Company: (Signature) Date/Time: Received by/Company: (Signature) Date/Time: US-18-2021/3:00 MTJL LAB USE ONLY Relinquished M/Company: (Signature) Table #: Date/Time: Received by/Company: (Signature) Acctnum: Trip Blank Received: Y N NA Template: HCL MeOH TSP Other Relinquished by/Company: (Signature) Prelogin: Date/Time: Received by/Company: (Signature) Date/Time: PM: Non Conformance(s): Page: ____ PB: YES / NO

Pace Analytical*

Custody Seal on Cooler/Box Present?

Packing Material:

Bubble Wrap

Yes

☐Bubble Bags

Document Name:

Sample Condition Upon Receipt (SCUR) - MN

Document Revised: 14Apr2021

Page 1 of 1

Biological Tissue Frozen? Yes No NA

☐Yes ☐No

Temp Blank?

Document No.: Pace Analytical Services -ENV-FRM-MIN4-0150 Rev.02 Minneapolis Sample Condition **Client Name:** Project #: WO#: 105624 Upon Receipt Due Date: 06/07/21 Courier: LUSPS Client CLIENT: COV SpeeDee ☐Commercial **1** Exceptions Tracking Number: 1211 X 682/112041 ENV-FRM-MIN4-0142

None

Seals Intact? Yes

Other:

☑No

☐ T1(0461)
☐ T2(1336)
☐ T3(0459)
☐ OS418-LS Thermometer: **K**|Wet Blue None Dry Melted T4(0254) T5(0489) **160285052** of Ice: Did Samples Originate in West Virginia? □Yes ☑No Were All Container Temps Taken? ☐Yes □No Temp should be above freezing to 6°C Cooler Temp Read w/temp blank: **Average Corrected** See Exceptions T5/21/21 ENV-FRM-MIN4-0142 Temp (no temp blank Correction Factor: 100 Cooler Temp Corrected w/temp blank: 1 Container only): 20.6 °c USDA Regulated Soil: (N/A, water sample/Other:_ Date/Initials of Person Examining Contents: 32 Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, Did samples originate from a foreign source (internationally, including ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? □No Hawali and Puerto Rico)? ☐Yes □No If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork. COMMENTS: Chain of Custody Present and Filled Out? **Z**yes □No 1. Chain of Custody Relinquished? **∏**Yes □No 2. **7** Yes Sampler Name and/or Signature on COC? No □N/A 3, Samples Arrived within Hold Time? Yes □No 4. 5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coll ☐ BOD/cBOD ☐ Hex Chrome Short Hold Time Analysis (<72 hr)? **☑**No ☐Yes Turbidity Nitrate Nitrite Orthophos Other **Rush Turn Around Time Requested?** Z No Yes 6. Sufficient Volume? **☑**Yes □No 7. Yes **Correct Containers Used?** □No 8. No No -Pace Containers Used? **⊿**Yes Yes Containers Intact? Field Filtered Volume Received for Dissolved Tests? Yes □No ZÍN/A 10. Is sedlment visible in the dissolved container? Yes No Is sufficient information available to reconcile the samples 11. If no, write ID/ Date/Time on Container Below: See Exception to the COC? **Ø**Yes □N₀ ENV-FRM-MIN4-0142 Matrix: Water Soil Oil Dother All containers needing acid/base preservation have been 12. Sample # ☑N/A ☐ Yes □No checked? All containers needing preservation are found to be in ■ NaOH ☐ HNO₃ ☐H₂SO₄ ØN/A □Yes □No Zinc Acetate compliance with EPA recommendation? (HNO₃, H₂SO₄, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide) Positive for Res. Yes See Exception Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, □ No □N/A Chlorine? No ENV-FRM-MIN4-0142 pH Paper Lot# DRO/8015 (water) and Dioxin/PFAS Res. Chlorine 0-6 Roll 0-6 Strip 0-14 Strip Extra labels present on soil VOA or WIDRO containers? ZN/A ZN/A ☐Yes □No 13. See Exception Headspace in VOA Vials (greater than 6mm)? Yes **□**No ENV-FRM-MIN4-0140 Trip Blank Present? Yes No **☑**N/A **Trip Blank Custody Seals Present?** No Ďn/a Yes Pace Trip Blank Lot # (if purchased): **CLIENT NOTIFICATION/RESOLUTION** Field Data Required? Yes No

Date/Time:

Labeled by: RUC



Person Contacted:

Comments/Resolution:



Reporting Flags

- A = Reporting Limit based on signal to noise (EDL)
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interferencepresent
- J = Estimated value
- L = Suppressive interference, analyte may be biased low
- Nn = Value obtained from additional analysis
- P = PCDEInterference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X =%DExceeds limits
- Y = Calculated using average of daily RFs
- * = SeeDiscussion

REPORT OF LABORATORY ANALYSIS

Appendix B

Sample Analysis Summary



Pace Analytical Services, LLC. 1700 Elm Street Minneapolis, MN 55414

Phone: 612.607.1700 Fax: 612.607.6444

Report Prepared for:

Katelyn Asato Covanta 91-174 Hanua St. Kapolei HI 96707

> REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10562480

Sample Receipt Date: 05/21/2021

Client Project #: Q2-2021 MBN Ash Sampling

Client Sub PO #: HONOL-0000079264

State Cert #: MN00064

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Ashley Williams, your Pace Project Manager.

This report has been reviewed by:

June 14, 2021

Ashley Williams, Project Manager (612) 346-8158 (612) 607-6444 (fax)

ashley.williams@pacelabs.com



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent o Pace Analytical Services. Inc.

Theresults relate only to the samples included in this report.

June 14, 2021



Pace Analytical Services, LLC.

1700 Elm Street Minneapolis, MN 55414 Phone: 612.607,1700

Fax: 612.607.6444

DISCUSSION

This report presents the results from the analysis performed on one sample submitted by a representative of Covanta. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The reporting limits were set to correspond to the lowest calibration points and a nominal 10-gram sample amount, and the sensitivity was verified by signal-to-noise measurements. The quantitation limits, adjusted for sample extraction amount, may be somewhat higher or lower than the reporting limits provided in this report. Estimated maximum possible concentration (EMPC) values were treated as positives in the toxic equivalence calculations. The sample was received above the recommended temperature range of 0-6 degrees Celsius.

Second column confirmation analyses of 2,3,7,8-TCDF values obtained from the primary (DB5-MS) column are performed only when specifically requested for a project and only when the values are above the concentration of the lowest calibration standard. Typical resolution for this isomer using the DB5-MS column ranges from 25-30%.

The isotopically-labeled PCDD/PCDF internal standards in the sample extract were recovered at 36-75%. Except for five low values, which were flagged "R" on the results tables, the labeled internal standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained. In cases where the estimated detection limits (EDLs) were above the standard reporting limits, the EDLs were provided and flagged "A".

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits.

Laboratory and matrix spike samples were also prepared with the sample batch using clean reference matrix or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds in the laboratory control spike were recovered at 92-122%; these results were within the target range for the method. Five background-subtracted recovery values obtained for the primary matrix spike sample were below the 70-130% target range and flagged "R" on the results table. Also, seven relative percent difference (RPD) values were above the 20% target upper limit. These deviations may be due to sample inhomogeneity.

REPORT OF LABORATORY ANALYSIS

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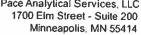
Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
		Missouri	10100
A2LA	2926.01	Montana	CERT0092
Alabama	40770	Nebraska	NE-OS-18-06
Alaska-DW	MN00064	Nevada	MN00064
Alaska-UST	17-009	New Hampshire	2081
Arizona	AZ0014	New Jersey	MN002
Arkansas - WW	88-0680	New York	11647
Arkansas-DW	MN00064	North Carolina-	27700
California	2929	North Carolina-	530
Colorado	MN00064	North Dakota	R-036
Connecticut	PH-0256	Ohio-DW	41244
Florida	E87605	Ohio-VAP (170	CL101
Georgia	959	Ohio-VAP (180	CL110
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon- rimary	MN300001
filinois	200011	Oregon-Second	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
lowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky-DW	90062	Tennessee	TN02818
Kentucky-WW	90062	Texas	T104704192
Louisiana-DEQ	AI-84596	Utah	MN00064
Louisiana-DW	MN00064	Vermont	VT-027053137
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Michigan	9909	West Virginia-D	382
Minnesota	027-053-137	West Virginia-D	9952C
Minnesota-Ag	via MN 027-053	Wisconsin	999407970
Minnesota-Petr	1240	Wyoming-UST	via A2LA 2926.
Mississippi	MN00064	•	

REPORTOF LABORATORY ANALYSIS

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Method 8290 Sample Analysis Results

Client - Covanta

Client's Sample ID MBN Q2-2021 Ash Sample Lab Sample ID 10562480001 U210603B_16 Filename Injected By SMT 10.2 g **Total Amount Extracted** Matrix Solid % Moisture 17.6 Dilution NA Dry Weight Extracted 8.41 g Collected 05/13/2021 02:00 **ICAL ID** U210423 Received 05/21/2021 09:10 CCal Filename(s) U210603B_01 & U210603B 18 Extracted 05/28/2021 12:30 Method Blank ID BLANK-90395 Analyzed 06/04/2021 07:57

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	54 1500	•	1.0 1.0	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	54 36 R 66
2,3,7,8-TCDD Total TCDD	ND 200	-	3.6 A 3.6	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.00 2.00 2.00 2.00	70 75
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	78 60 970		5.0 5.0 5.0	1,2,3,6,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00 2.00 2.00	53 49 64 57 66
1,2,3,7,8-PeCDD Total PeCDD	25 190		5.0 5.0	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,7,8,9-HpCDF-13C	2.00 2.00 2.00 2.00	59 52 41
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF	62 65 46 13		5.0 5.0 5.0 5.0	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C 1,2,3,4-TCDD-13C	2.00 4.00	49 39 R
Total HxCDF	550		5.0	1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	12 20 16 210		5.0 5.0 5.0 5.0	2,3,7,8-TCDD-37Cl4	0.20	39
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	140 16 180		5.0 5.0 5.0	Total 2,3,7,8-TCDD Equivalence: 77 ng/Kg (Lower-bound - Using 2005	WHO Facto	rs)
1,2,3,4,6,7,8-HpCDD Total HpCDD	120 240		5.0 5.0			
OCDF OCDD	52 400		10 10			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). ND = Not Detected EMPC = Estimated Maximum Possible Concentration NA = Not Applicable RL = Reporting Limit NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

A = Reporting Limit based on signal to noise (EDL)

R = Recovery outside target range

REPORTOFLABORATORYANALYSIS

Solid

05/28/2021 12:30

NA



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Method 8290 Blank Analysis Results

Lab Sample Name
Lab Sample ID
BLANK-90395
Filename
U210603B_06
Dilution
Total Amount Extracted
DFBLKHP
BLANK-90395
Dilution
Extracted

ICAL ID U210423 Analyzed 06/04/2021 00:30 CCal Filename(s) U210603B_01 & U210603B_18 Injected By SMT

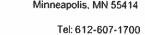
Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND	derei-derener derei-derener	1.0 1.0	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	74 63
2,3,7,8-TCDD Total TCDD	ND ND		1.0 1.0	1,2,3,7,8-PeCDF-13C 2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	90 91 96
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND		5.0 5.0 5.0	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C 1,2,3,4,7,8-HxCDD-13C	2.00 2.00 2.00 2.00 2.00	74 76 78 73
1,2,3,7,8-PeCDD Total PeCDD	ND ND		5.0 5.0	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00	75 69 63
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF	ND ND ND ND	******	5.0 5.0 5.0 5.0	1,2,3,4,7,8,9-HpCDF-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C 1,2,3,4-TCDD-13C	2.00 2.00 4.00	60 66 57 NA
Total HxCDF	ND		5.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND		5.0 5.0 5.0 5.0	2,3,7,8-TCDD-37Cl4	0.20	62
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND		5.0 5.0 5.0	Total 2,3,7,8-TCDD Equivalence: 0.00 ng/Kg (Lower-bound - Using 2005	WHO Facto	ors)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		5.0 5.0			
OCDF OCDD	ND ND		10 10			

 $\label{local_concentration} Conc = Concentration (Totals include 2, 3, 7, 8-substitute disomers). \\ EMPC = Estimated Maximum Possible Concentration$

RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

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Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-90396		
Filename	U210603B_02	Matrix	Solid
Total Amount Extracted	10.7 g	Dilution	NA
ICAL ID	U210423	Extracted	05/28/2021 12:30
CCal Filename(s)	U210603B_01 & U210603B_18	Analyzed	06/03/2021 21:31
Method Blank ID	BLANK-90395	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.22	109	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.0 2.0	64 63
2,3,7,8-TCDD Total TCDD	0.20	0.24	122	1,2,3,7,8-PeCDF-13C 2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.0 2.0 2.0 2.0	79 85 88 66
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.0 1.0	1.0 0.92	103 92	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C 1,2,3,4,7,8-HxCDD-13C	2.0 2.0 2.0	69 69 70 70
1,2,3,7,8-PeCDD Total PeCDD	1.0	0.97	97	1,2,3,4,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,7,8,9-HpCDF-13C	2.0 2.0 2.0 2.0	67 62 59
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.0 1.0 1.0	1.1 1.1 1.1	111 107 112	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.0 4.0	66 57
1,2,3,7,8,9-HxCDF Total HxCDF	1.0	1.0	101	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.0 2.0	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.0 1.0 1.0	1.1 1.2 1.0	109 120 105	2,3,7,8-TCDD-37Ci4	0.20	60
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.0 1.0	1.1 1.1	106 106			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.0	1.1	107			
OCDF OCDD	2.0 2.0	2.2 2.4	111 119			

Qs = Quantity Spiked Qm = Quantity Measured

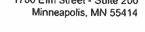
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations Nn = Value obtained from additional analysis

NA = Not Applicable

* = See Discussion

REPORT OF LABORATORY ANALYSIS





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Method 8290 Spiked Sample Report

Client - Covanta

Client's Sample ID Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	105 U21 10.2 U21 U21	62480001-M 0603B_03 ? g 0423	Ash Sample-MS IS & U210603B_18	Matrix Dilution Extracted Analyzed Injected By	Solid NA 05/28/202 06/03/202 SMT		
Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.40	199 R	2,3,7,8-TCDF- 2,3,7,8-TCDD-	-13C	2.00 2.00	58 35 R
2,3,7,8-TCDD	0.20	0.23	116	1,2,3,7,8-PeC 2,3,4,7,8-PeC 1,2,3,7,8-PeC	DF-13C DD-13C	2.00 2.00 2.00	76 80 81
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	1.00 1.00	1.35 1.30	135 130	1,2,3,4,7,8-Hx 1,2,3,6,7,8-Hx 2,3,4,6,7,8-Hx 1,2,3,7,8,9-Hx	CDF-13C CDF-13C CDF-13C	2.00 2.00 2.00 2.00	67 69 68 67
1,2,3,7,8-PeCDD	1.00	1.11	111	1,2,3,4,7,8-Hx 1,2,3,6,7,8-Hx 1,2,3,4,6,7,8-F 1,2,3,4,7,8,9-F	CDD-13C lpCDF-13C	2.00 2.00 2.00 2.00	68 66 55 39 R
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.34 1.37 1.27	134 137 127	1,2,3,4,6,7,8-F OCDD-13C		2.00 4.00	58 47
1,2,3,7,8,9-HxCDF	1.00	1.13	113	1,2,3,4-TCDD- 1,2,3,7,8,9-Hx		2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.15 1.24 1.11	115 124 111	2,3,7,8-TCDD-	37Cl4	0.20	31
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF	1.00 1.00	1.63 1.17	163 R 117				
1,2,3,4,6,7,8-HpCDD	1.00	1.61	161 R				
OCDF OCDD	2.00 2.00	1.52 4.12	76 R 206 R				

Results reported on a dry weight basis and are valid to no more than 2 significant figures. R = Recovery outside target range

Qm = Quantity Measured

REPORT OF LABORATORY ANALYSIS

Qs = Quantity Spiked

Rec. = Recovery (Expressed as Percent)



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Method 8290 Spiked Sample Report

Client - Covanta

Client's Sample ID Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	1056 U210 10.3 U210 U210	32480001-MS 0603B_04 g 0423	sh Sample-MSD SD U210603B_18	Matrix Dilution Extracted Analyzed Injected By	Solid NA 05/28/202 06/03/202 SMT		
Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.65	323	2,3,7,8-TCDF- 2,3,7,8-TCDD-	13C 13C	2.00 2.00	66 44
2,3,7,8-TCDD	0.20	0.20	102	1,2,3,7,8-PeCI 2,3,4,7,8-PeCI 1,2,3,7,8-PeCI	DF-13C DF-13C DD-13C	2.00 2.00 2.00	84 88 93
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	1.00 1.00	1.70 1.48	170 148	1,2,3,4,7,8-Hx(1,2,3,6,7,8-Hx(2,3,4,6,7,8-Hx(1,2,3,7,8,9-Hx(DDF-13C DDF-13C DDF-13C	2.00 2.00 2.00 2.00	73 78 75 73
1,2,3,7,8-PeCDD	1.00	1.24	124	1,2,3,4,7,8-Hx(1,2,3,6,7,8-Hx(1,2,3,4,6,7,8-H	DDD-13C pCDF-13C	2.00 2.00 2.00	77 74 59
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.71 1.55 1.48	171 155 148	1,2,3,4,7,8,9-H 1,2,3,4,6,7,8-H OCDD-13C		2.00 2.00 4.00	38 R 62 55
1,2,3,7,8,9-HxCDF	1.00	1.22	122	1,2,3,4-TCDD-1 1,2,3,7,8,9-Hx0		2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.23 1.33 1.18	123 133 118	2,3,7,8-TCDD-3	37CI4	0.20	39
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF	1.00 1.00	2.32 1.22	232 122				
1,2,3,4,6,7,8-HpCDD	1.00	2.12	212				
OCDF OCDD	2.00 2.00	2.31 5.49	116 275				

Results reported on a dry weight basis and are valid to no more than 2 significant figures. R = Recovery outside target range

Qm = Quantity Measured

REPORT OF LABORATORY ANALYSIS

Qs = Quantity Spiked

Rec. = Recovery (Expressed as Percent)

Pace Analytical Services, Inc. 1700 Elm Street - Suite 200 Minneapolis, MN 55414

> Tel: 612-607-1700 Fax: 612-607-6444



Method 8290 Spike Sample Results

Client - Covanta

Client Sample ID Lab Sample ID MS ID

MSD ID

MBN Q2-2021 Ash Sample 10562480001

10562480001-MS 10562480001-MSD Sample Filename MS Filename MSD Filename U210603B_16 U210603B_03 U210603B_04 Dry Weights

Sample Amount 8.41 g MS Amount 8.4 g MSD Amount 8.5 g

Analyte	Sample Qm MS/MSD Qs MS Qm MSD Qm (ng) (ng) (ng) RPD			Background Subtracted				
, ,	(61.1)	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD
2,3.7,8-TCDF	0.45	0.20	0.40	0.65	47.5	0	98	200.0
2,3,7,8-TCDD	0.00	0.20	0.23	0.20	12.3	116	102	12.3
1.2.3,7,8-PeCDF	0.66	1.00	1.35	1.70	22.9	70	105	40.2
2,3,4,7,8-PeCDF	0.51	1.00	1.30	1.48	13.4	79	98	21.0
1,2,3,7.8-PeCDD	0.21	1.00	1.11	1.24	10.9	90	103	13.3
1.2.3.4,7.8-HxCDF	0.52	1.00	1.34	1.71	23.7	82	118	36.1
1.2.3,6,7,8-HxCDF	0.55	1.00	1.37	1.55	12.1	82	100	19.3
2,3,4,6,7,8-HxCDF	0.38	1.00	1.27	1.48	15.1	89	109	20.9
1,2,3,7,8,9-HxCDF	0.11	1.00	1.13	1.22	7.5	103	111	8.2
1,2,3,4,7,8-HxCDD	0.10	1.00	1.15	1.23	6.2	105	113	6.7
1,2,3,6,7,8-HxCDD	0.16	1.00	1.24	1.33	7.3	107	117	8.3
1,2,3,7,8,9-HxCDD	0.13	1.00	1.11	1.18	5.9	98	105	6.7
1,2,3,4,6,7,8-HpCDF	1.15	1.00	1.63	2.32	34.6	48	116	83.2
1,2,3,4,7,8,9-HpCDF	0.13	1.00	1.17	1.22	4.2	104	109	4.7
1,2,3,4,6,7,8-HpCDD	1.01	1.00	1.61	2.12	26.9	60	110	58.9
OCDF	0.43	2.00	1.52	2.31	41.6	54	94	53.7
OCDD	3.35	2.00	4.12	5.49	28.6	39	107	94.2

Definitions

MS = Matrix Spike
MSD = Matrix Spike

MSD = Matrix Spike Duplicate Qm = Quantity Measured Qs = Quantity Spiked

% Rec. = Percent Recovery RPD = Relative Percent Difference

NA = Not Applicable NC = Not Calculated CDD = Chlorinated dibenzo-p-dioxin

CDF = Chlorinated dibenzo-p-furan
T = Tetra

Pe = Penta Hx = Hexa Hp = Hepta O = Octa